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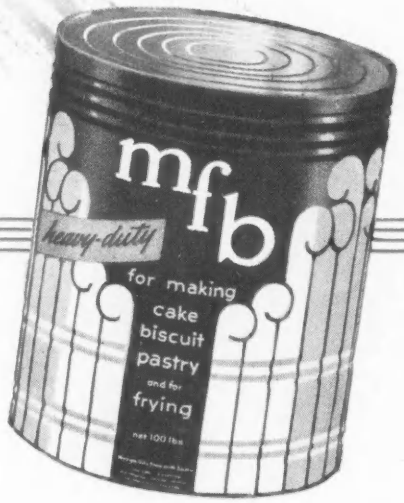

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VOLUME 28
NUMBER 2

Journal OF THE American Dietetic Association

CONTENTS, FEBRUARY 1952

SOME WORLD NUTRITIONAL PROBLEMS—*Leonard A. Maynard*, Ph.D., D.Sc. 109

WEIGHT REDUCTION ON LOW-FAT AND LOW-CARBOHYDRATE DIETS. I. Clinical Results and Energy Metabolism—*D. C. Cederquist*, Ph.D., *W. D. Brewer*, Ph.D., *R. M. Beegle*, *A. N. Wagoner*, *D. Dunsing*, and *M. A. Ohlson*, Ph.D. 113

EFFECT OF OMITTING BREAKFAST ON THE PHYSIOLOGIC RESPONSE OF THE AGED—*W. W. Tuttle*, Ph.D., *Kate Daum*, Ph.D., *C. J. Imig*, Ph.D., *Barbara Randall*, Ph.D., and *Mary T. Schumacher* 117

A COMPARISON OF DIETARY STUDY METHODS. I. Dietary History vs. Seven-Day Record—*Charlotte M. Young*, Ph.D., *Faith W. Chalmers*, *Helen N. Church*, *Mary M. Clayton*, Ph.D., *Ruth E. Tucker*, Ph.D., *Anne W. Werts*, and *Walter D. Foster* 124

FACILITIES OF THE LIBRARY OF CONGRESS—Their Use in Studying the History of Nutrition—*Burton W. Adkinson*, Ph.D. 129

YIELD OF HOME-FROZEN FRUITS AND VEGETABLES—*Elsie H. Dawson* and *Gladys L. Gilpin* 134

CATHARINE BEECHER, FOUNDER OF HOME ECONOMICS—*Charlotte E. Biester*, Ed.D. 136

OUR ROLE IN CIVIL DEFENSE—*Norvin C. Kiefer*, M.D. 140

CURRENT COMMENT
Clinical Instruction in Diet Therapy in the Small Hospital—*Sister John Baptist* 144

BOOK REVIEWS 150

CURRENT LITERATURE 152

NEWS NOTES 166

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Some World Nutritional Problems[1]

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WE ARE constantly made aware by news articles and other reports that severe hunger and starvation continue to occur at various times and places throughout the world. Apart from these acute situations which are local and mostly temporary, it seems clear that there are chronic shortages of food in terms of nutritional needs which affect large segments of the world's population. While total world outputs are now higher than prewar, the per capita supplies of food—measured either in pounds or calories—are below prewar levels and more unevenly distributed. This means that, in view of the rapid rise in population, the situation has become worse in critical areas such as the Far East.

The argument is frequently advanced that the general problem has no solution because measures for the improvement of nutrition and health will aggravate it by greatly increasing the number to be fed. In support of this argument, it has been pointed out that life expectancy at birth is only thirty to forty years for over half of the world's population, including those who present the critical nutritional problems; on the other hand, for those people who have been able to take advantage of modern medical and nutritional science, it is sixty-five to seventy years.

We cannot let this consideration stop us from trying to find solutions. Apart from humanitarian reasons, the provision for a larger and better food supply for many of the world's population is an urgent need for the advancement of world peace and stability. Hunger promotes unrest and political upheavals, as well as preventing economic advancement. The United States has a vital stake in solving world nutritional problems in the interest of preserving its own security and way of life. Certainly we are all conscious of this problem right now. We must furnish much of the leadership required, and it must be intelligent leadership which understands how to deal with situations far different from our own.

Recognizing that the primary need is for a larger food supply, various national and international organizations are making significant progress in stepping up food crop production in the critical areas of the world. These activities must be continued and expanded. They are particularly in need, however, of the guidance which could be supplied by more exact knowledge of the specific nutritional needs of the population in question. These are the nutritional problems which I propose to discuss.

The basic objective of measures to increase food crop production in a given critical area should be to provide food which will improve the nutrition and health of its people. This involves more than increasing the total food supply in tons or calories. An effective nutritional program must be based on a knowledge of the nutritional needs of the population in question and of the nutritive value of the food supplies actually or potentially available.

Here lie many unsolved problems in the countries where the information is most needed to guide food programs. There has been far too common an assumption that such information obtained for our own population can readily be modified to apply to the critical areas throughout the world. Vastly different situations are met in terms of racial characteristics, environment, endemic diseases, varieties of food crops, and others. The blind promotion of American dietary patterns and agricultural practices can retard rather than advance the solution of problems under these conditions.

It is clear that, under enlightened leadership, marked progress has been made in certain critical areas in laying a nutritional foundation for a sound agricultural and food program. An outstanding example is presented by the many years of study in Indonesia, as recently summarized by Van Veen (1).

The Food and Agriculture Organization has furnished technical assistance on the nutritional as well as the agricultural and economic aspects of world food problems. The World Health Organization is carrying out important nutritional programs related to health. In general, however, the importance of dovetailing food production programs with specific nutritional needs is far too little appreciated. The determination of what specific needs may exist, in addition to more food in general, should be a part of any program for improving the food supply.

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 9, 1951.

NEED FOR MEDICAL SURVEYS

The first step called for in assessing nutritional needs in many critical areas is a medical survey. This should give attention not only to the specific deficiency diseases but also to other diseases and infections which may contribute to malnutrition. The extent of the occurrence of parasites, which is so common in tropical areas and under unsanitary conditions, is of obvious importance. Certain other diseases may markedly modify the body's need for and utilization of nutrients.

It now appears that endemic goiter is much more prevalent in various mountainous regions of the world than has hitherto been appreciated. The size of this problem is such as to call for a reconsideration of the etiology of goiter and of the significance of naturally occurring goitrogenic agents, as well as of effective dietary methods of control in specific situations.

The recent, numerous reports of the occurrence of the syndrome variously referred to as kwashiorkor, malignant malnutrition, and otherwise indicate a medical and nutritional problem of large importance. The condition is commonly ascribed to the consumption of a restricted diet, consisting largely of carbohydrate foods and containing little animal protein. Much more specific information is needed, both as to dietary relationships and as to whether the syndrome observed elsewhere is identical with that originally reported from Africa. Throughout tropical and subtropical countries, anemias are common in which nutrition may play a direct role, or an indirect one as a result of the alteration of nutritional requirements by parasitic infections.

OPPORTUNITIES FOR RESEARCH

The importance of critical and exhaustive clinical studies in assessing the state of nutrition is clearly shown by the recent report of the extensive British investigations in Wuppertal, Germany, from 1946 to 1949 (2).

It is clear that assessment of the occurrence and significance of subacute nutritional deficiencies presents the greatest general problem. Here the application of biochemical as well as medical techniques is useful. In this country, we realize the need for more exact and reliable criteria for identifying borderline cases of malnutrition. As we help solve this problem for our own situation, through correlated medical, biochemical, and dietary studies, we will contribute even more to the solution of a nutritional problem for people for whom limited food and economic resources cannot justify any large "factors of safety" or "insurance" in their nutrient intakes.

These studies of nutritional status must be paralleled by the accumulation of data on the nutrient content of the foods in use or available, both as marketed and as actually consumed. In most of the countries of greatest concern, available data are fragmentary or unreliable. Some countries have set up rather complete tables of food consumption, but the data have been taken largely from tables of other countries. Particularly for foods of plant origin, varietal and climatic differences make such tables very unreliable.

The kind of studies needed in many areas is illustrated by the extensive series published by Munsell and associates for Central America (3–7). These studies revealed the use of many products very dissimilar in composition to any for which data have been accumulated in other countries. Some foods of unexpectedly high nutritive value were thus discovered. The data emphasize the error of assessing the adequacy of a diet in terms of figures in our tables or of assuming that a diet must be faulty because its pattern is quite different from ours. Many have been too prone to do this.

STANDARDS MUST BE ATTAINABLE

With a knowledge of the nutrient composition of the foods in question, dietary data can be used along with medical and biochemical data to help assess nutritional status and delineate the nutritional problems. The combined data can also be utilized to set up a dietary or nutrient standard to guide nutritional programs and feeding operations. I use the term "standards" in a broad sense. At least at the outset, it would seem unrealistic to set up standards which contain all the "factors of safety" of our Recommended Dietary Allowances. They may be entirely unjustifiable in terms of the limited total resources of the family or individual. Further, goals which are manifestly unattainable may discourage rather than promote nutritional advancement.

Apart from these considerations, standards for various populations must be expected to differ from those set up for our population, since marked differences in body size, activity, and climatic environment exist. This fact is brought out clearly by the recent report on calorie requirements of the Food and Agriculture Organization (8).

Dietary studies should also reveal the role of food habits and religious, economic, and other factors in determining what people eat. Effective programs for the improvement of nutrition must take account of these factors, as well as physiologic needs and food supplies available. In many areas food habits may be nutritionally less satisfactory than in our own country, but that does not make them any easier to change. In fact, attempts to change them in the direction of our own pattern may be very wrong, culturally as well as economically.

Data on the average per capita food and nutrient supplies available are misleading, even in our own country, as measures of the state of nutrition, for many persons fail to get their share. This is much more true in many of the critical areas of the world.

Family and individual data are needed in these areas to help assess the extent of the food and nutritional problem and to indicate the specific remedial measures required.

The peoples of the world who have the greatest or most severe nutritional problems consume diets primarily of plant origin. We must recognize that for economic reasons, apart from the question of food habits, this will in general continue to be the case. Their limited land resources in terms of the total amount of food needed indicate that food crops must be consumed directly, rather than via animals which can transform them into more digestible, nutritious, and palatable products, involving, however, large wastages in the process.

The target of the Food and Agriculture Organization for 1960, as published in 1946, specified an increase of over 5000 per cent in the milk supply of China and of over 300 per cent in meat, fish, and eggs for India; this seems both impossible and inappropriate in terms of the economy of these countries. It is easy to plan an adequate diet in terms of the "Basic Seven," but even in this country there needs to be more recognition of the principle that there are a variety of ways of meeting nutritional needs.

PROTEIN NUTRITION

In many of the areas of the world where the nutritional situation is most acute, the diet must continue to come primarily from the foods of plant origin. Thus, the problem as to how to meet nutritional needs from such foods is of primary importance. This problem has received comparatively little attention in this country, for obvious reasons. It is commonly assumed, and there are some data to support the idea, that a vegetarian diet is much less effective than a mixed diet such as our own. But controlled studies with human subjects, where other variables are ruled out, have not been made. The important problem is to find out, by such studies, the specific deficiencies of such a diet and how they can be corrected in terms of the food available or economically possible. A specific question relates to protein. We know that, in general, mixtures of animal and plant sources provide a more efficient amino acid mixture than the latter alone. We do not know that adequate protein nutrition of man is impossible from plant sources alone, or even from the specific combinations which make up the diets of groups in critical areas. A larger total intake may be the answer.

Reference has been previously made to the fact that the occurrence of kwashiorkor has been found associated with diets low in animal protein. The recent paper by Wills (9) both provides evidence that a lack of animal protein is an essential causative factor of the disease in Africa and also shows the importance of further studies of the protein quality of diets consisting mostly of foods of plant origin.

Farm animal studies have now shown us that the poor growth, previously ascribed to the poor protein quality of the plant sources, was due, at least in part, to the absence of the "animal protein" factor. For nearly two years, the Nutrition Institute of Central America and Panama has been engaged in an extensive and carefully controlled human study of vegetable versus animal protein sources and vegetable sources supplemented with vitamin B_{12}. This study is providing data of basic importance for many other areas.

VEGETARIAN DIETS

It is recognized that vegetarian diets are generally very deficient in calcium, at least by Western standards. Is this actually a serious physiologic deficiency in the areas in question? If so, how can it be corrected in terms of foods that can be made available? Alternatively, measures and methods of introducing calcium salts into the diet need exploration. Obviously, there are also vitamin questions that need attention.

In citing problems associated with vegetarian diets, it should be mentioned that such diets, as consumed in many countries, are frequently better than appreciated by those familiar with only our dietary pattern. Our diet requires the inclusion of large amounts of foods which are rich sources of protein, minerals, and vitamins because so large a proportion—over 20 per cent—of it is made up of sugar and fats that furnish nothing except calories. By contrast, the Chinese farm diet contains less than 3 per cent of its calories as fats and less than 1 per cent as sugars and sirup, according to studies published by Buck (10). This diet contains 12 per cent of its calories as protein, though 83 per cent of the total calories are from cereals and 95 per cent from all plant sources.

The use of unmilled or lightly milled cereals is also an important protective factor for many peoples consuming largely vegetarian diets. On the other hand, the use of refined cereals occurs to a larger extent than is generally appreciated. This is particularly true in cities. Even among the farm families in China, in my experience, white rice seemed to be preferred and thus used when available and if it could be afforded. Social considerations play an important role here. We would all agree that the emphasis should be on the less refined foods, but other measures may be more realistic in many situations. The rice enrichment program which Dr. R. R. Williams has recently inaugurated in the Philippines and elsewhere in the Orient is a case in point. The enrichment of staple foods is certainly preferable to the promotion of the use of vitamin concentrates.

Various problems that are involved in the use of diets consisting of foods of plant origin are excellently

set forth in the proceedings of the British Nutrition Society meeting held in January 1951 (11).

The solution of the nutritional problems discussed in this paper would provide a much better basis than now exists, in most of the areas in question, for needed food production and management programs. Of course, the latter cannot await the outcome of nutritional studies, but the importance of these studies should be more fully appreciated by those responsible for agricultural and economic programs and supported accordingly. The results may well suggest changes in the kinds as well as the amounts of the food crops that should be grown for the best use of the land available in terms of the health and economic welfare of the people concerned. Plant breeding programs which take account of nutritive value as well as yield of a specific food crop may be indicated.

At the same time the nutritionist must recognize that recommendations for nutritional improvement should be in keeping with the agricultural and economic developments which are possible for the country in question. In most situations any proposed changes must not decrease the total supply of calories available, nor increase their cost. Cooperation between agricultural, food, and nutrition scientists and a mutual recognition of the contributions which each can make provide the essential bases for the most effective solution of world nutritional problems.

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Dietitians and Civil Defense

Dietitians throughout the country know they will play vital roles in defense, along with doctors and nurses, if atomic attack comes. Plans they have already made in several large cities are cited in "The Role of Dietitians and Home Economists in Civil Defense," a booklet recently published by the Paper Cup and Container Institute.

Camden, New Jersey, and Utica, New York, have staged full-dress bombing attacks; Rochester, New York, has trained a thousand women to serve emergency meals; Los Angeles' high school and junior college cafeterias have been mobilized in a giant feeding program; and New York, Chicago, and Corpus Christi, Texas, have designated school lunchrooms as feeding centers.

Hospitals are also preparing to care for many beyond their usual number and to evacuate all ambulatory patients to make room for casualties—which means that special temporary feeding arrangements must be made. The U. S. Marine Hospital in Detroit has a comprehensive plan which allows for expansion to a minimum of four times normal capacity. In Washington, Georgia Smith and District of Columbia dietitians are perfecting plans for use by existing hospitals and studying service shortcuts for both bed and ambulatory patients.

Washington has also made outstanding plans in another emergency-feeding field: that of restaurant operation. All the city's food suppliers and restaurateurs will, on news of attack, become government food dispensers to the public, with all food free of cost and reimbursement to occur later. Volunteers, particularly those with hotel and restaurant experience, are being trained for mass-feeding work. Chicago; Concord, Massachusetts; and Albany, New York, are also working out extensive plans for institutional conversion.

Home economists have taken the lead in organizing one city for defense. Battle Creek, Michigan, which is not likely itself to be bombed is preparing to receive evacuees from more likely target areas nearby. The Home Economics Club of 100 members, 74 of whom are housewives, have canvassed factories, schools, clubs, churches, and the local Red Cross chapter in an outstanding example of leadership.

Weight Reduction on Low-Fat and Low-Carbohydrate Diets

I. Clinical Results and Energy Metabolism[1]

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OBESITY, once thought to be synonymous with good health and prosperity and associated with power and strength, is considered today a detriment to health, life, and happiness. An old French proverb states, "To be fat is to be old." The occurrence of obesity with hypertension, diabetes, heart disease, atherosclerosis, toxemia of pregnancy, cirrhosis of the liver, and other degenerative diseases is well recognized. The opinion is growing that in a few favored areas like the United States, the most serious nutritional fault may be that of overeating with a resulting increase in the incidence of obesity.

Obesity has been defined as that condition in which the body contains an abnormal amount of adipose tissue. Caloric intake in excess of caloric output is the accepted cause of obesity. Little research has been done to determine why many individuals are able to maintain ideal weight while others gain weight and become obese. Why do certain individuals eat more food than is needed? The psychologist suggests that obese individuals use food to relieve the tensions of emotional deprivations (1). Worry, fear, boredom, and anxiety undoubtedly result in overeating for certain individuals. On the other hand, a good appetite is a characteristic of a healthy individual and maintenance of an eating pattern satisfactory during the twenties may lead to 30 or 40 lb. excess weight at sixty.

There is evidence that the introduction of labor-saving devices in homes, on farms, and in industry has resulted in decreased energy needs, which have not been paralleled by decreased food consumption. Further, parents of growing children usually eat the same foods as their children who have far greater energy needs. This excess in caloric consumption occurs at a time in life when activity is decreasing and requires precise adjustments of the food intake if weight gains are to be prevented. Few men and women, unfamiliar with the details of nutritional needs, are prepared to make such adjustments without skilled guidance.

It has been observed that children emulate the eating habits of their parents. In families where both parents are overweight, 70 per cent of the offspring are overweight; where one parent is overweight, 40 per cent of the offspring are overweight (2). Entertaining for social and political reasons may result in the consumption of excessive calories. Good behavior in children is rewarded with sweets, and the association of eating with acceptable behavior continues throughout life. Concentration on the psychologic patterns of obesity may tend to oversimplify the problem and to ignore some of the more obvious social situations which promote unwise eating.

If caloric intake in excess of caloric output is the cause of obesity, it follows that caloric restriction to some level below caloric expenditure will result in weight loss. Many low-calorie diets have been suggested in the past. That the use of these diets has not been marked with success is evidenced by increasing numbers of obese individuals. Excessive fatigue, irritability, mental depression, and extreme hunger are reported by many individuals who attempt to follow the usual low-calorie diets. It is optimistic to believe that a diet which results in such reactions will create no emotional repercussions. Likewise, a diet satisfying to the appetite should remove one emotional block to weight loss. If that diet could be fitted into

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[2] The authors wish to acknowledge the technical assistance of Hazel C. Amen, Betty Carstensen, May S. Bay, Jean Brown, and Blair Williams.

the family food pattern so that the obese member need modify, but not completely change his food habits, the chances for success in following the diet would seem to be greater. These studies were undertaken to explore the problems of weight loss from the viewpoint of developing more satisfactory dietary procedures than those now in common use.

LOW-FAT REDUCING DIET

From January to June 1950, except for the regular college vacations, four overweight college girls were kept on weighed diets (Series I). On the basis of anthropometric measurements, these girls were judged to be 8 to 20 per cent overweight. All foods eaten, except for black coffee and tea, which were allowed *ad libitum*, were prepared and served in the Home Economics Building. The first two weeks of the study the girls were allowed to select their food from a buffet table and to consume any desired quantity of the foods available. The menus presented were based on commonly eaten foods and took into consideration the preferences of these particular girls.

The last seven days of the self-selected regimen constituted the first balance period. The girls were then placed on a diet which furnished an average of 1194 calories and 10.5 gm. nitrogen per day. No attempt was made to control the salt intake of these subjects. A typical menu is shown as Series I in Table 1.

Food was sampled daily, and seven-day composites were analyzed for calories and nitrogen throughout the study. Every third week complete urine and fecal collections were made and analyzed for nitrogen. In addition, fecal caloric losses were measured.

Hourly records of activity were kept for seven consecutive days and basal energy determinations were made at frequent intervals. The activity records were of the inventory type wherein each subject recorded the time spent in such activities as sitting in class, walking, eating, dancing, dressing and undressing, participation in sports, and so on, as well as the time spent resting and sleeping. These records were summarized on a 24-hr. basis. The energy expenditure values assigned to the different degrees of muscular activity were taken from Rose (3). The activity records, together with the basal energy determinations, were used to estimate the total daily caloric expenditures of the subjects.

Examination of the self-selected diets of these girls indicated that their average daily intakes were in the order of 2000 to 2400 calories per day. The 1200-calorie diet represented reductions in intake of 800 to 1000 calories. Theoretically, these should have resulted in weight losses of 10 to 12 kg. in the experimental period. Actually the weight losses were 0.1, 2.9, 3.2, and 7.9 kg. Estimations of caloric output obtained from the activity records and basal metabolism records indicated that caloric expenditures had decreased 200 to 500 calories per day, including the decreases in basal energy output of 180 to 300 calories per day. These results are summarized in Figure 1. Decreases in energy expenditures may account in part for failures in weight loss. However, the caloric intakes were maintained below the calculated energy expenditures without satisfactory weight losses in three cases out of four. The nitrogen data, which will be reported later, indicated that the subjects did not eat food other than that furnished at the diet table.

The subjects reported lack of "pep" throughout

TABLE 1

Sample menus

SERIES I LOW-FAT REDUCING DIET	SERIES II LOW-CARBOHYDRATE REDUCING DIET
Breakfast	
Orange	Orange and grapefruit juice
Poached egg on whole-wheat toast	Two eggs Toast and butter
Skim milk	Whole milk
Coffee	
Noon Meal	
Fruit plate	Pork chops
Cottage cheese	Broccoli
Ry-Krisp	Whole milk
Skim milk	
Evening Meal	
Liver loaf	Hamburg steak
Baked potato	Creamed potatoes
Cooked tomatoes	Grapefruit sections
Carrot and celery curls	Whole milk
Grapefruit sections	
Skim milk	
Coffee	

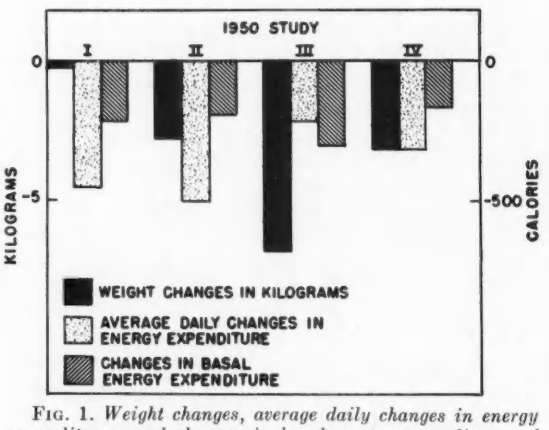

FIG. 1. *Weight changes, average daily changes in energy expenditures, and changes in basal energy expenditures of college women maintained on a low-fat reducing diet (Series I).*

most of the study. They were discouraged because they were always conscious of being hungry.

LOW-CARBOHYDRATE REDUCING DIET

Because of the dissatisfactions of both subjects and experimenters in the first weight reduction study, a second study was planned using a diet patterned in part after that of Pennington (4). A preliminary study was begun in October 1950 and extended to include a larger group of girls at a later date. On the basis of anthropometric measurements, these girls were judged to be 8 to 41 per cent overweight. The general plan of the experiment was similar to that described earlier. After a preliminary period of self-selected diets, the subjects were given a diet which furnished approximately 1500 calories per day and 16 gm. nitrogen (Series II). The carbohydrate intake was approximately 85 to 90 gm. per day; therefore, more than half of the ingested calories were derived from fat.

The minimum quantity of salt which would satisfy the taste of each subject was determined at the beginning of each experiment, and this intake was kept constant throughout the study. A typical menu is shown in Table 1 (Series II).

The weight losses which were obtained after sixteen weeks on the experimental diet ranged from 8.8 to 16.8 kg. Estimations of daily energy expenditure indicated decreases of 45 to 340 calories for six subjects and an increase of 350 calories for one subject. The basal energy output remained relatively constant for two subjects, increased for one subject, and decreased 150 to 340 calories for four subjects. These data are presented graphically in Figure 2.

The self-selected diets of these subjects ranged in value from 1670 to 2136 calories per day, with a mean intake of 1829 calories (Table 2). The estimated decrease in energy expenditure of Subjects

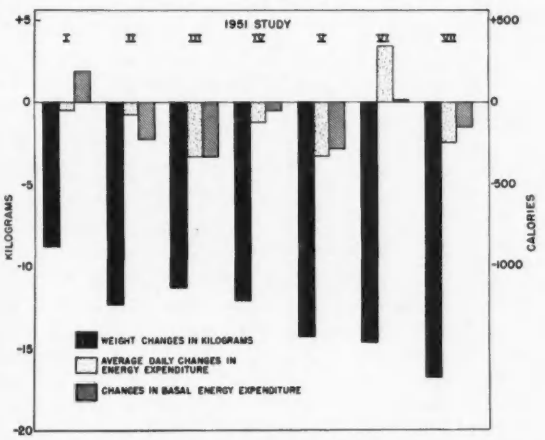

FIG. 2. *Weight changes, average daily changes in energy expenditures, and changes in basal energy expenditures of college women maintained on a low-carbohydrate reducing diet (Series II).*

3 and *5* was greater than was the decrease in caloric consumption, yet satisfactory weight loss was experienced throughout the experimental period. Subjects *1*, *2*, *4*, and *7* showed a decrease in daily caloric expenditure which was somewhat less than the decrease in caloric intake, while Subject *6* not only decreased her caloric intake, but at the same time increased her caloric output.

Two possible sources of error must be recognized in these calculations. First, the self-selected diets may not have been truly representative of the food habits of these individuals, and secondly, the estimation of total energy expenditure based on the measured basal expenditure plus a sum of the calculated expenditures obtained from activity records is at best only an approximation. Since the same energy factors were used throughout the study and the activity records were interpreted by the same technicians, it can be assumed that the calculations of energy expenditure before, during, and after weight reduction are comparable.

Four additional college age subjects were maintained on the weight reduction diet for varying lengths of time. One of these attained her ideal weight in ten weeks; the participation of one subject was interrupted by her residence in the home management house, but in spite of this, she attained her ideal weight before the study was terminated. The data for three of these subjects were not included with those shown in the tables and graphs because of their irregular participation. The metabolic data for the fourth subject who failed to lose more than 5.2 kg. in seven months were not included in group averages because the data indicated that she did not adhere to the diet.

The changes in basal energy output for the studies reported here, together with the data from the study of Brown and Ohlson (5), are summarized in Figure 3. Because of similarity in the diets, the data from the 1950 weight study (Series I) are grouped with Brown's data. It will be noted that thirteen out of

TABLE 2

*Calculated daily energy balances and total weight losses of college girls maintained on a low-carbohydrate reducing diet**

SUBJECT	INTAKE ON SELF-SELECTED REGIMEN	DECREASE IN INTAKE ON EXPERIMENTAL DIET	CHANGE IN DAILY ENERGY EXPENDITURE	WEIGHT LOSS IN 16 WEEKS
	calories	*calories*	*calories*	*kg.*
1	1855	355	− 45	8.8
2	2064	564	− 87	12.4
3	1670	170	−332	11.4
4	2136	636	−127	12.2
5	1820	320	−343	14.3
6	1684	184	350	14.6
7	2018	518	−251	16.8

* Intake on experimental diet: 1500 calories

seventeen subjects showed a decrease in basal energy expenditure ranging from 145 to 500 calories per day. The basal energy output was relatively constant for three subjects (Brown, Subject *4*; 1951 study, Subjects *4* and *6*) and increased for one subject.

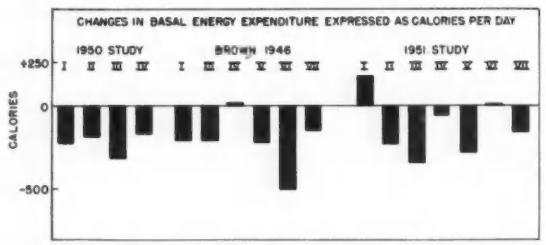
CHANGES IN BASAL ENERGY EXPENDITURE EXPRESSED AS CALORIES PER DAY
1950 STUDY
BROWN 1946
1951 STUDY
I II III IV I III IV V VI VII I II III IV V VI VII
+250
0
-500
CALORIES

FIG. 3. *Changes in basal energy expenditure of college women maintained on a low-fat reducing diet (Series I, this study; and Brown [5]); and on a low-carbohydrate reducing diet (Series II, this study).*

It has been demonstrated in animal experiments that the body is capable of adjusting to its nutritional environment. The adjustment to the limitation of calories appears to be related to a decrease in the production of hormones by the pituitary gland; this is followed by a decrease in caloric demand (6). Changes in human adjustment to the limitation of calories have been reported by Keys *et al.* (7) in their study of human starvation. A decrease in basal oxygen consumption occurred when the food intakes of their subjects were sharply reduced below their habitual intakes. The alteration tended to be progressive when the inadequate diets were continued.

WEIGHT MAINTENANCE

Two of the eleven subjects in Series II achieved desired weight losses thirteen weeks before the close of the school year. In the time available, an attempt was made to determine the caloric intakes which would maintain ideal weights for these individuals. Each girl was consulted in regard to the foods to be added to the basic menu. In both cases milk, cereal foods, fruit, and vegetables were increased, and simple desserts including plain cake, cookies, and ice cream were added according to the expressed preferences of the subjects. Caloric intakes were increased gradually to approximately 1900 calories per day for Subject *1* and 2000 calories for Subject *2*. Neither gained during thirteen weeks on increased intakes. Two additional subjects reached their ideal weights two weeks before the completion of the study; thus it was not possible to establish maintenance intakes for them.

Without exception, the low-carbohydrate reducing diet resulted in satisfactory weight losses when the subjects adhered to the diet. The subjects reported a feeling of well-being and satisfaction. Hunger between meals was not a problem. Weight losses up to 33 kg. (unpublished data) have not resulted in flabbiness of tissues or looseness of skin.

This constitutes a progress report of work completed to date. It is planned to continue the study using isocaloric diets, where in one instance the chief sources of calories will be from protein and carbohydrate and in the other the chief sources of calories will be from protein and fat.

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Nonfat Dry Milk Solids in Margarine and Butter

Nonfat dry milk solids, the Bureau of Dairy Industry announces, account for some of the nutritive properties of margarine and butter. Experiments by the Bureau to determine whether butter has nutritive properties different from those of butter substitutes and other fats showed that rats grew more on a high-butter diet than on a corn oil diet. When butter, butterfat, oleomargarine, and oleofat were compared, young rats whose mothers were being fed the butter products showed a tendency to gain more weight than the others during the three weeks' nursing period. However, this difference was not statistically significant. Comparisons made after weaning showed no significant difference in growth on the four different products, except that the higher level of fat in each case produced more growth than the lower level.

If confirmed by later work, these preliminary results suggest that butter and margarine contain some nutrient or nutritive property in their constituents aside from the true fats. In butter, the nutritive property would be in the milk solids accompanying the fat in the final product. In margarine, it would possibly be in the skim milk (cultured or otherwise) that is incorporated in this product.—*Excerpted from the Report of the Chief of the Bureau of Dairy Industry, Agricultural Research Administration, 1951.*

Effect of Omitting Breakfast on the Physiologic Response of the Aged[1]

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IT HAS been shown previously in this laboratory (1, 2) that the omission of the morning meal has a deleterious effect both on the physical and mental capacity of young men and young women. The purpose of the present investigation was to determine if the same things hold true for men past sixty years of age.

The responses used to show any effects which the omission of breakfast might have on older individuals were as follows:

(a) Choice reaction time.
(b) Neuromuscular tremor magnitude.
(c) Maximum grip strength.
(d) Grip strength endurance.
(e) Oxygen required to perform a given amount of work.

For the purpose of demonstrating the effects of the omission of the morning meal, two basic breakfasts were employed. Both were alike in that they supplied one-fourth the daily requirements of the essential foodstuffs, as well as calories. They differed in that one was built around bacon, eggs, and milk and the other, around cereal and milk. "No breakfast" means that no food or coffee was consumed between 6 P.M. and 12 noon the following day.

THE SUBJECTS

Eight men between sixty and eighty-three years of age served as subjects for the experiment herein reported. The subjects were fairly well distributed as to economic, social, and educational background. They lived within easy access to the hospital and ate all their meals in the hospital dining room. A rigid physical examination was given each man at the beginning of the experiment and at frequent intervals during the experiment to assure us that the requirements were not hazardous to his well-being and to protect him against any physical disability that might develop from time to time.

DESIGN OF THE EXPERIMENT

The experiment was designed to show the effect of the omission of breakfast on physiologic responses of the aged. The work reported here covered a period of seventeen weeks. After a large number of subjects were interviewed, twelve were selected who appeared to be physically and mentally capable of performing the requirements of the experiment, eight of them being sixty years of age or older. During the first four-week period, the subjects were sent through the line at the hospital cafeteria and allowed to select the kinds of food, and as much of it as they desired. During the preliminary period, the dietitian kept a record of the food eaten and observed the eating habits of the group, so that she would be better able to meet the nutritional demands of the subjects. Also, during the preliminary period, the subjects were brought into the physiologic laboratory and taught the experimental procedures they were to follow. At the end of the four weeks, it appeared that all concerned had been adequately indoctrinated.

During the remainder of the experiment, the complete diet of the subjects was rigidly controlled, both as to content and amount, the only variable being the breakfast. During the five weeks which followed (Period 1), the subjects ate a basic bacon-egg-and-milk breakfast; during the subsequent four weeks (Period 2), they had no breakfast. During the four weeks following the "no breakfast" period, they ate a basic cereal-and-milk breakfast (Period 3). The breakfast patterns (Table 1) were all adjusted to provide one-fourth of the daily protein and caloric requirement of each subject.

During all experimental periods each subject came to the laboratory and performed the physiologic experiments twice each week between 10 A.M. and 12 noon. The data were collected on the same day of the week at the same hour of the day, from each

[1] This work was generously supported by a research grant from Cereal Institute, Inc., Chicago. Received for publication November 29, 1951.

TABLE 1

Breakfast patterns

ITEM	WEIGHT OF SERVING	PROTEIN	ENERGY
Basic Bacon-Egg-and-Milk Breakfast			
	gm.	*gm.*	*calories*
Fruit	98	0.5	86
Egg (soft)	50	6.4	79
Bacon (broiled)	30	4.2	93
Enriched white bread (toasted)	60	5.2	158
Grape jelly	20	0.1	61
Butter	15	0.1	109
Whole milk	240	8.4	165
Calories	750		
Protein (gm.)	25		
Fat (gm.)	37		
Carbohydrate (gm.)	80		
Basic Cereal-and-Milk Breakfast			
Fruit	77	0.4	68
Cereal (dry wt.)	30	3.2	110
Enriched white bread (toasted)	50	4.2	130
Sugar	10	0.7	40
Butter	10	—	73
Whole milk	480	16.8	330
Calories	750		
Protein (gm.)	25		
Fat (gm.)	28		
Carbohydrate (gm.)	100		

subject. Due to unavoidable circumstances a complete set of records was not obtained for all subjects.

To avoid the effects of exercise on some of the tests, the sequence of experimentation was as follows: (a) choice reaction time, (b) neuromuscular tremor magnitude, (c) grip strength, and (d) oxygen consumption during work.

TECHNIQUES

Choice Reaction Time

Reaction time is defined as the interval elapsing between the appearance of a stimulus and the response to it. The stimulus consisted of a bank of five red lights. The subjects were instructed to respond to Light *5* only. The pattern consisted of a promiscuous showing of all the lights, but the subject responded only when Light *5* was flashed. This plan was presented so as to introduce the element of choice in the response pattern. A Chronoscope was arranged so that when Light *5* was shown, the hand started, and when the subject responded by pressing a key, the hand stopped. The reaction time was read from the Chronoscope dial in milliseconds.

The subject was alone in a dark room provided with a dim red light and after becoming dark adapted, performed several practice trials to assure proper adjustment to the apparatus. Each subject performed fifty reactions, the average being regarded as the choice reaction time for the period.

TABLE 2

Mean body weight of eight aged men during three experimental periods

PERIOD	MEAN BODY WEIGHT							
	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8
	lb.	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*
1	165	218	161	170	167	129	112	126
2	163	215	164	170	164	134	113	128
3	163	204	169	174	155	141	112	—

Neuromuscular Tremor

The method employed for measuring neuromuscular tremor magnitude has been described in detail by Tuttle, Janney, and Wilkinson (3). Briefly, the technique is to have the subject stand, with his right arm outstretched and unsupported so that his index finger lightly touches the activating pin of a Statham strain gauge. The voltage generated by the strain gauge is amplified sufficiently so that it can be recorded by a Brush recorder. The area under a 1-second interval sample of the neuromuscular tremor record is measured by means of a planimeter and expressed as square centimeters. This value is designated as neuromuscular tremor magnitude.

Maximum Grip Strength and Strength Endurance

The technique used for measuring maximum grip strength and grip strength endurance has been described by Tuttle, Janney, and Thompson (4). The dynamometer employed takes advantage of a strain gauge technique. The dynamometer is arranged so that by gripping its handles, a strain gauge is activated. The voltage generated in the gauge is directly proportional to the pressure applied to the dynamometer and is amplified so that it can be recorded on an Esterline-Angus meter.

The maximum grip strength is determined by measuring the greatest height of the meter curve and multiplying this value by a gauge constant which converts the reading into pounds.

Grip strength endurance is defined as the average strength exerted for a period of 1 min. expressed in pounds. This is obtained by having the subject grip the dynamometer maximally for 1 min. and determining the average pounds maintained during this interval of time.

Oxygen Required to Perform Work

During previous experiments, maximum work output as measured by a bicycle ergometer was used as an index to alterations in work capacity. It seemed reasonable to suppose that any stress that would alter maximum work output also might alter the

TABLE 3

Effect of omitting breakfast on the choice reaction time of the aged

CALCULATION	CHOICE REACTION TIME							
	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8
Period 1—Basic Bacon-Egg-and-Milk Breakfast								
	milliseconds	*milliseconds*	*milliseconds*	*milliseconds*	*milliseconds*	*milliseconds*	*milliseconds*	*milliseconds*
Mean	239	340	309	274	255	350	322	304
Standard deviation	12.6	19.9	11.9	17.2	12.3	31.4	19.6	20.6
Period 2—"No Breakfast"								
Mean	242	345	341	278	261	348	320	313
Standard deviation	17.5	33.5	34.4	21.4	17.6	26.7	7.9	13.7
t value (Period 1 vs. Period 2)	0.57	0.38	2.63	0.31	0.99	0.15	0.18	1.91
Significance level	60%	80%	2%	90%	40%	80%	80%	10%
Period 3—Basic Cereal-and-Milk Breakfast								
Mean	240	341	296	260	255	342	303	—
Standard deviation	10.1	17.2	14.1	26.4	19.7	12.3	21.7	—
t value (Period 2 vs. Period 3)	0.33	0.28	3.46	0.86	0.50	0.50	1.42	—
Significance level	80%	80%	5%	50%	70%	70%	20%	—

amount of oxygen required to do a given amount of work. Due to the advanced age of the subjects, a requirement of strenuous exercise was thought to be inadvisable, and thus the amount of oxygen required to perform a given amount of relatively light work was used as an index to any change which might occur in work efficiency as a result of the omission of breakfast.

The work performed by each subject consisted of walking on a treadmill at the rate of 2 mi. per hour up a 2 per cent grade. Obviously, the amount of work performed by each subject varied slightly with changes in body weight. The mean body weight of each subject during each experimental period is shown in Table 2. The influence which any body weight changes might have on the experiment is considered in the discussion.

The procedure for determining the amount of oxygen used to perform the work has been described elsewhere (5). Briefly, the method is as follows: The subject breathed oxygen out of a modified Roth-Benedict-type spirometer, and a record was made of the drum drop during the rest period. Without interrupting the record, the treadmill was started and the subject began walking and continued to do so for 3 min. At the end of the work period, the treadmill was stopped, and the subject stood quietly until his oxygen debt was paid. By calculating the drum drop for the periods of rest, work, and recovery, and multiplying the results by the spirometer constant, the amount of oxygen used for each period was determined. By subtracting the resting oxygen from the total amount used for work and recovery, the amount necessary to perform the work was found. The work oxygen was correlated to standard temperature and pressure.

THE DATA

The physiologic responses for the periods studied are compared on the basis of means for each subject.

Choice Reaction Time

A comparison of the data on choice reaction time collected during both breakfast periods and the "no breakfast" period is shown in Table 3. The data show that in the case of Subject 3, his choice reaction time was significantly shorter during both breakfast periods than when he omitted breakfast. In all other cases there were no significant changes.

It is concluded from these data that, in the majority of cases, the omission of breakfast did not alter the reaction time of the aged.

Neuromuscular Tremor Magnitude

A comparison of the neuromuscular tremor magnitude during the basic bacon-egg-and-milk period (Period 1) and the "no breakfast" period (Period 2) is shown in Table 4. The data show that in 87 per cent of the subjects (seven cases), the neuromuscular tremor magnitude was significantly less during the period when they ate breakfast than when they omitted it, while 13 per cent (one case) showed no significant change. During the period when the subjects ate a cereal-and-milk breakfast (Period 3), 71 per cent (five cases) had a tremor magnitude which was significantly less than when they omitted breakfast (Period 2); 29 per cent of the subjects (two cases)

TABLE 4

Effect of omitting breakfast on neuromuscular tremor magnitude in the aged

CALCULATION	NEUROMUSCULAR TREMOR MAGNITUDE							
	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8
Period 1—Basic Bacon-Egg-and-Milk Breakfast								
	sq. cm.	*sq. cm.*	*sq. cm.*	*sq. cm.*	*sq. cm.*	*sq. cm.*	*sq. cm.*	*sq. cm.*
Mean	2.00	2.87	2.59	2.42	5.50	3.88	2.90	3.04
Standard deviation	0.53	1.30	0.17	0.27	0.78	0.62	0.96	1.06
Period 2—"No Breakfast"								
Mean	2.76	4.41	2.93	4.20	9.69	5.60	5.06	4.16
Standard deviation	0.88	0.47	0.41	0.20	2.31	1.17	1.50	1.01
t value (Period 1 vs. Period 2)	2.70	3.35	2.27	10.47	5.04	3.73	4.69	2.07
Significance level	5%	1%	5%	0.1%	0.1%	1%	0.1%	10%
Period 3—Basic Cereal-and-Milk Breakfast								
Mean	2.71	2.99	2.52	2.65	5.62	3.45	2.63	—
Standard deviation	0.24	0.61	0.22	0.27	1.09	0.49	0.32	—
t value (Period 2 vs. Period 3)	1.39	1.74	5.45	7.70	4.46	4.39	2.63	—
Significance level	20%	10%	0.1%	0.1%	0.1%	0.1%	0.1%	—

showed no significant change in tremor magnitude for the two periods.

It is concluded from this part of the experiment that in the majority of cases, the omission of breakfast by men past sixty years results in an increased neuromuscular tremor magnitude.

Maximum Grip Strength

The effect of the omission of breakfast on the maximum grip strength of the aged is shown in Table 5. Here it will be noted that during the bacon-egg-and-milk breakfast period (Period 1), 75 per cent of the subjects (six cases) exhibited a greater maximum grip strength than during Period 2 when they omitted breakfast, while 25 per cent (two cases) did not change significantly. A comparison of Period 3 (basic cereal-and-milk breakfast) with Period 2 ("no breakfast") shows that the maximum grip strength of 57 per cent of the subjects (four cases) was greater during Period 3. Forty-three per cent of the sub-

TABLE 5

Effect of omitting breakfast on the maximum grip strength of the aged

CALCULATION	MAXIMUM GRIP STRENGTH							
	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8
Period 1—Basic Bacon-Egg-and-Milk Breakfast								
	lb.	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*
Mean	81	68	37	97	73	69	54	55
Standard deviation	15.1	10.9	5.5	15.0	3.5	4.1	2.1	6.9
Period 2—"No Breakfast"								
Mean	77	59	31	72	53	61	40	43
Standard deviation	12.7	14.8	5.7	2.5	2.8	3.7	6.6	4.2
t value (Period 1 vs. Period 2)	0.61	1.46	2.40	2.63	13.33	3.98	4.51	4.62
Significance level	60%	20%	5%	5%	0.1%	1%	0.1%	0.1%
Period 3—Basic Cereal-and-Milk Breakfast								
Mean	80	65	36	89	73	69	53	—
Standard deviation	5.8	6.3	4.6	12.5	3.3	4.0	7.4	—
t value (Period 2 vs. Period 3)	0.33	0.90	1.80	3.14	12.90	3.80	4.15	—
Significance level	80%	40%	10%	2%	0.1%	1%	0.1%	—

TABLE 6

Effect of omitting breakfast on the grip strength endurance of the aged

CALCULATION	GRIP STRENGTH ENDURANCE							
	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8
Period 1—Basic Bacon-Egg-and-Milk Breakfast								
	lb.	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*	*lb.*
Mean	49	33	24	56	44	24	32	31
Standard deviation	8.5	6.8	2.5	7.7	3.0	3.0	4.0	4.0
Period 2—"No Breakfast"								
Mean	46	28	20	45	25	23	25	25
Standard deviation	7.5	6.8	2.2	6.4	3.6	2.5	3.2	4.6
t value (Period 1 vs. Period 2)	0.81	1.61	3.63	2.03	11.87	0.77	4.37	3.00
Significance level	50%	20%	1%	10%	0.1%	50%	0.1%	1%
Period 3—Basic Cereal-and-Milk Breakfast								
Mean	49	34	25	62	47	34	40	—
Standard deviation	4.5	3.0	3.5	6.9	6.7	4.1	4.4	—
t value (Period 2 vs. Period 3)	0.25	2.04	3.33	3.26	8.14	5.79	10.00	—
Significance level	80%	5%	1%	2%	0.1%	0.1%	0.1%	—

jects (three cases) did not show a significant change.

It is concluded from this part of the experiment that maximum grip strength became less in the majority of cases when the morning meal was omitted.

An experiment conducted by us previously showed that in the case of men who were twenty to thirty years of age, maximum grip strength was not altered by the omission of breakfast (6).

Grip Strength Endurance

The grip strength endurance values obtained from the subjects during the bacon-egg-and-milk breakfast period (Period 1), the "no breakfast" period (Period 2), and the cereal-and-milk breakfast period (Period 3) are shown in Table 6. The data show that during Period 1, 50 per cent of the subjects (four cases) had a greater strength endurance than during Period 2. Four cases did not change significantly. During Period 3, 86 per cent of the subjects (six cases) had a greater grip strength endurance than during Period 2. One subject did not change significantly.

The data show that the omission of breakfast resulted in a decreased strength endurance in the majority of cases.

Oxygen Required for a Given Amount of Work

The data collected showing the effect of the omission of breakfast on the amount of oxygen required to perform a given amount of work are presented in Table 7. The data show that 50 per cent of the subjects (four cases) used significantly more oxygen during the "no breakfast" period than during the period when they ate a basic breakfast of bacon, eggs, and milk. In two cases, the increase in oxygen used is significant at the 6 per cent level of confidence,[2] and in two other cases the difference is not regarded as significant at all. During the next breakfast period, when the subjects ate a basic breakfast of cereal and milk, 57 per cent of the subjects (four cases) used less oxygen than when they omitted the morning meal. In 43 per cent (three cases), there was no significant difference.

It is concluded from this experiment that approximately one-half of the subjects used more oxygen to perform a given amount of work when they omitted breakfast.

DISCUSSION

Experience in selecting a group of older men showed that in many cases the effects of disease overshadow the results of aging. An attempt was made to procure men who were as free from the common diseases as possible, so that any physiologic difference which might occur would not be the result of some disease, but rather a characteristic of the aged. The group as a whole was surprisingly free from acute infections and other temporary illnesses.

Breakfast habits of long standing were demonstrated in the case of Subject *4*. Although he was one of the younger men in the group, he claimed that to go without breakfast debilitated him to the extent that he was unable to carry out his morning routine. Subject *1* was consistently unaffected by the omis-

[2] Since in this experiment 5 per cent is the level at which the null hypothesis is rejected, this value cannot be regarded as significant.

TABLE 7

Effect of omitting breakfast on the oxygen required by the aged to do work

CALCULATION	OXYGEN REQUIRED TO DO WORK							
	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7	Subject 8
Period 1—Basic Bacon-Egg-and-Milk Breakfast								
	ml.	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*	*ml.*
Mean	1294	1911	1050	1221	1112	758	533	797
Standard deviation	267	337	368	147	341	133	155	78
Period 2—"No Breakfast"								
Mean	1429	2476	1478	1756	1703	1173	751	999
Standard deviation	377	346	368	236	224	169	170	125
t value (Period 1 vs. Period 2)	0.71	3.69	2.09	2.72	3.22	4.71	1.34	2.25
Significance level	50%	1%	6%	5%	1%	1%	26%	6%
Period 3—Basic Cereal-and-Milk Breakfast								
Mean	1161	2022	1218	1344	1407	817	525	—
Standard deviation	180	212	285	135	234	120	111	—
t value (Period 2 vs. Period 3)	1.58	8.73	1.35	3.12	2.16	4.09	1.80	—
Significance level	20%	0.1%	20%	2%	5%	0.1%	20%	—

sion of breakfast, although he expressed a fondness for food in the morning. There were no cases where the omission of breakfast improved physiologic response.

The influence which changes in body weight might have on the amount of oxygen required to perform the prescribed work must not be overlooked. Subjects *1*, *4*, *7*, and *8* showed no significant changes from period to period. However, Subjects *2* and *5* were significantly lighter during Period 3 than Period 2. Subject *3* was significantly heavier during Period 3 than Period 2. This might account for the fact that he failed to use significantly less oxygen during Period 3. Subject *6* showed significant gain in weight from period to period, yet he used more oxygen during the "no breakfast" period than the breakfast periods.

No doubt changes in body weight played a part in the amount of oxygen required to perform the prescribed work. However, the data show that the oxygen changes as related to changes in body weight were inconsistent; therefore, changes in body weight fail to explain the variations in oxygen requirement from period to period.

These changes in body weight were brought about purposely in Subjects *2*, *5*, and *6*, because this seemed advisable from a health standpoint.

It is also interesting that, insofar as there are comparable data available, the reactions of the older men to the omission of the morning meal were similar to those of young men studied in another experimental investigation (2). Also, it is of interest to note that, under similar circumstances, the choice reaction time of the older men was significantly longer than that of the younger men, and their tremor magnitude was significantly greater.

SUMMARY AND CONCLUSIONS

Data were collected from eight men varying in age from sixty to eighty-three years, to show the effect of the omission of breakfast on choice reaction time, neuromuscular tremor magnitude, maximum grip strength, grip strength endurance, and the amount of oxygen required to perform a uniformly specified amount of exercise. On the basis of data gathered during two breakfast periods and one "no breakfast" period, the following conclusions are drawn:

(a) Choice reaction time was not affected by the omission of breakfast, except in one subject who had a consistently longer reaction time during the "no breakfast" period.

(b) The omission of breakfast resulted in an increased neuromuscular tremor magnitude in the majority of the cases.

(c) Maximum grip strength became less in the majority of cases when the morning meal was omitted.

(d) The omission of the morning meal resulted in a decrease in grip strength endurance in the majority of the men.

(e) One-half of the subjects required more oxygen to walk on a treadmill up a 2 per cent grade, at the rate of 2 mi. per hour for 3 min. when they omitted breakfast. In the other half, there was no significant change.

(f) The type of basic breakfast did not affect significantly the physiologic response of this group of older men.

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Oklahoma Interns Learn About Community Nutrition

As dietetic interns, our introduction to public health came with our affiliation with the Oklahoma State Department of Health, where we learned the duties and responsibilities of the various divisions.

An opportunity to practice budgeting was afforded when we were given a family budget to plan. We worked on food budgeting in class, and some of us visited in the home of the family for which we were preparing a budget. We learned the amount of money the family had to spend for food, the number and ages of the family members, the type of work each did, the family's health problems, the grocery store where the family shopped, and the cooking and refrigerating facilities. From this, we computed the money to be spent and the amount of food needed for an adequate diet; we priced foods and wrote a set of menus and a market order.

Making home visits was one of the most educational and interesting experiences we had with the public health nurse. Here we received an insight into the environment of the patients we serve. We saw the facilities they had for producing and preparing food.

With the nutrition consultant, we visited a county health department. We attended a staff meeting and listened to a discussion of such problems as the need to know food habits of individuals and families, the need to record pertinent facts about food habits in the health record, the educational material available, including suggestions for advancing better nutrition during the examination of preschool children, portrayals of the value of animal protein, and the value of and procedure in using the new diabetic diet form.

With a public health nurse, we attended a general medical clinic, where we studied the waiting room to find available space to place pamphlets, leaflets, and posters. We talked to the patients about the foods that should be eaten for a well-balanced diet, and we stressed the importance of vitamin D concentrate and orange juice in the diets of infants. We instructed a diabetic patient about her diet and a patient on a reducing diet.

We also had the privilege of making a field trip with a county sanitary engineer. We observed the check sheets used to grade eating establishments, and we visited several dairies and one milk bottling plant. Other calls made with the sanitary engineer were to rural schools, frozen food plants, and a sewage disposal plant.

During a typical visit with the dietary consultant to an institution, we observed food service, dishwashing methods, clean-up procedures, menu planning, and food purchasing. We showed films of interest to both employees and the administration on food service, sanitation, and nutrition.

One day's work was with the state's nutrition supervisor on hospital blueprints. After a valuable explanation of symbols and signs, we saw walls, doors, windows, and pieces of equipment take shape from the many lines, arrows, squares, and circles on the blueprint. We traced the flow of work through the proposed layout of equipment in the kitchen, and we considered the convenience and efficiency of the arrangement. We wrote specifications for work tables, range units, steam tables, pot and pan racks, mixers, and other equipment. We learned about equipment standards in general by using equipment catalogs.

At a statewide workshop for school lunchroom managers and cooks, we heard a discussion on the selection and care of knives, and sanitation in the school lunchroom, and we saw the preparation of several protein-rich main dishes. We also participated in group discussions on menu planning, food purchasing, personnel management and problems, supervisory training, and food cost records.—*Mary Lou Stevens, Dietetic Intern, University of Oklahoma Hospitals, Oklahoma City.*

A Comparison of Dietary Study Methods

I. Dietary History vs. Seven-Day-Record[1]

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FOR the past four years, six experiment stations in the northeastern region of the United States (Maine, Massachusetts, New York, New Jersey, Rhode Island, and West Virginia) have been engaged in a cooperative research problem dealing with nutritional status (Project NE-4). The overall objective of this project is to study the relation between dietary survey, blood nutrient studies, and medical examinations as means of assessing the nutritional status of individuals or population groups. Details of the methods of the project are given elsewhere (1). Each station studied different population groups[9], but the methods of collecting data were the same for all stations.

To insure uniformity in the collection of dietary data, a committee composed of a representative from each of the participating stations was organized to select and standardize dietary methods and further to evaluate critically these methods as to their values and particular uses. The data gathered with such methods cover population groups from kindergarten children through mature industrial workers and pregnant women.

The present paper reports a comparison of the dietary history and the seven-day record as measures of the food intake on an individual basis and on a group basis. Further, an attempt is made to determine if it is possible to predict the dietary intake of an individual by one method using figures collected by the other method.

Previous work in this area was reported in 1942 by Huenemann and Turner (2) who made a critical study concerning the significance of dietary histories and dietary records in order to determine how a dietary history obtained by interview compared with an actual food record. Using twenty-five six- to sixteen-year-old subjects, they obtained dietary histories of the research type complete with cross check followed by ten- to fourteen-day weighed food records. When calculations based on dietary histories were compared with those based on dietary records, it was found that no history agreed with the dietary record within 20 per cent for all constituents. Approximately one-half of the histories differed significantly from the records in five or six constituents. Dietary histories obtained by the interview method were thus found to have little quantitative value and their use as dependable data in research programs involving small numbers of cases, the authors concluded, must be regarded as an extremely uncertain procedure. They further believe that in an individualized study the food history should be checked by a quantitative (weighed) record of food intake. The authors believed the chief reason for discrepancies was that patients actually did not know what or how much they ate.

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[9] Maine—junior high school students; Massachusetts—pregnant women; New York—grade school children; New Jersey—industrial workers; Rhode Island—high school and college students; West Virginia—college students.

PROCEDURES

Subjects

In Table 1 are given the occupation, sex, and age of the subjects studied by the six stations in the present study.

Collection of Data

Two methods of collecting dietary data were used: the research type of dietary history, modified after Burke (3) and the seven-day dietary record. In contrast to Huenemann and Turner's study (2), the subjects did not weigh their food. The order of procedure used in obtaining dietary data from individual subjects was: first, to take the dietary history by the interview method, and second, to give instructions for keeping the seven-day record. These personal instructions, in most cases, were followed by group instruction on record keeping.

Certain procedures were agreed upon in obtaining the dietary history. It was felt that the interviewers should be skilled and have some training and experience in dietary interviewing before data were collected. In obtaining the dietary history, the interviewer obtained first the usual dietary pattern. Then variations in usual intake were obtained along with information relative to foods not eaten, when and where meals were eaten, and with whom. The usual dietary pattern and its variations were then cross-checked by inquiries concerning the usual intake of a check list of foods. Various sizes of empty glasses, dishes, and spoons were used by the interviewer to aid the subject in estimating the size of portions eaten. This type of interview took 1 hr. or longer. In the study of industrial workers it was necessary to limit the interview to 30 min. It was found that complete information on food consumption could be obtained in that time by eliminating questions relative to general health and home conditions. If the interviewer felt it was impossible to elicit what appeared to be reliable information, the history was discarded.

The seven-day records were kept on a form worked out by the dietary committee. Only skeleton headings were used, such as time of day, food, and amount, in order to avoid suggesting intake to the subjects. The U. S. Public Health Service sheet, "Instructions for Making Your Food Record," was adopted for use to accompany the blanks for recording the dietary record (4). In addition, supplementary oral instructions were given either individually or by group. Records were kept by the subjects with the realization that the procedure would incorporate the errors incident to a study of this type. Maine followed the same procedure but collected only four-day records.

Calculation of Data

All histories and records were calculated in terms of specific nutrients: total calories, protein, calcium, phosphorus, iron, vitamin A value, thiamine, riboflavin, niacin, and ascorbic acid. The U. S. Public Health Service table (5) was accepted for use throughout the region, supplemented by Bowes and Church tables (6). The histories and records were calculated by a simplification of the long method developed by Babcock of the New Jersey Experiment Station (7).

Statistical Treatment

The method of linear regression was used to answer the first question: Do the two methods give similar results in estimating the dietary intake for individuals, e.g., whether for a given individual the history gave an unbiased estimate of the seven-day record? To determine if the relationship between the two methods of estimating dietary intake was the same for a given nutrient from station to station, that is, with the different classes of people studied, the regression coefficients were examined. Details of and justification for statistical methods used appear in another publication (8).

Question 2 was: Do the two methods, dietary history and seven-day record, give the same estimate of group means for each nutrient? To answer this question, two different procedures were employed. The first was that of computing the percentage differences between the two means. This procedure does not answer the question of how large a difference

TABLE 1

Subjects studied by the six stations

STATION	OCCUPATION	AGE					
		Male			Female		
		No.	Average	Range	No.	Average	Range
			yr.	*yr.*		*yr.*	*yr.*
Maine	Junior high school pupils	30	15	13–19	33	15	13–16
Massachusetts	Pregnant women	—	—	—	49	—	16–34
New Jersey	Industrial workers	129	38	20–62	—	—	—
New York	Seventh and eighth grade pupils	76	14	11–18	88	13	12–16
Rhode Island	High school and college students	10	18	15–26	67	19	16–27
West Virginia	College students	17	20	17–26	51	20	18–37

can be tolerated except by subjective decision and entirely ignores both the variation of which the mean value is an arbitrary central figure and the number of observations in the mean. The second procedure used was that of the paired comparison "t" test which has the effect of eliminating the variation due to size of individual intake. Conclusions were based on a joint use of these two procedures. To investigate the effect of the type of subjects studied, that is, the effect of dissimilar populations on the size of the mean difference between the two methods for a given nutrient, a study was made of the heterogeneity of these mean differences by the analysis of variance.

The correlations found between history and record were used as a criterion to judge whether one method could predict the value given by the second method for an individual.

RESULTS

Estimate for Individual

The first question raised was whether in estimating the dietary intake of a person, a dietary history and a seven-day record gave essentially the same answer. From a statistical standpoint, we were testing the hypothesis that history is an unbiased estimate of the seven-day record. From the data contributed by Massachusetts, New Jersey, New York, Rhode Island, and West Virginia, this hypothesis was rejected for all nutrients and for all stations, leading to the inescapable conclusion that the history did not give the same estimate of intake for an individual as the seven-day record. Similar results were found for the four-day records collected in Maine.

A compound answer was found to the inquiry as to whether the relationship between the two methods of estimating dietary intake was the same for the different population groups studied. The relation between the two methods was approximately the same for all the groups of people for calories, phosphorus, vitamin A, and ascorbic acid. The relationships were not the same for protein, calcium, iron, thiamine, riboflavin, and niacin.

The practical significance of this finding is best put negatively. Here is evidence that the history and the seven-day record were not always mutually consistent from population to population in estimating quantitative intake. We might infer that the degree of relative bias can vary with the type of subject when studied from the individual point of view. One might hypothesize that calories, phosphorus, vitamin A, and ascorbic acid are from foods which are difficult for even adults to estimate; that the other nutrients are from foods such as milk, bread, and so on, which some groups, such as home economics students, adult homemakers, and workers, may estimate better than children. However, we should not overlook the possibility that this inconsistency could be due in part to the relative skills of the interviewers obtaining the histories, despite their training and the following of a prescribed procedure in obtaining the history.

Estimate for Group

A comparison of the use of the dietary history and the seven-day record to describe the average intake of a group of individuals is given in Table 2. In most cases the history considerably overestimated the intake as compared with the results of the seven-day record. The results at Rhode Island for five of the nutrients and at West Virginia for two nutrients were exceptions to this generalization. Further examination revealed that the overestimation by history was the greatest among the younger children if we assume equally skilled interviewers.

TABLE 2

*Percentage differences between history and record**

NUTRIENT	DIFFERENCE					
	Massachusetts	New Jersey	New York	Rhode Island	West Virginia	Maine
	%	%	%	%	%	%
Calories	9.8	12.2	24.6	−8.5	−7.2	27.6
Protein	19.8	8.0	26.8	−3.4	0.7	22.0
Calcium	27.9	28.9	31.8	11.9	8.4	29.3
Phosphorus	22.3	18.2	30.4	4.0	0.6	26.7
Iron	15.0	12.1	24.7	−7.7	−0.5	29.0
Vitamin A	32.9	46.2	35.4	28.1	27.3	60.0
Thiamine	6.7	11.4	23.6	−9.5	8.5	17.5
Riboflavin	18.3	24.7	30.3	9.1	9.9	29.6
Niacin	14.9	8.9	30.8	0.0	0.0	30.6
Ascorbic acid	9.0	45.2	34.8	−4.5	14.5	52.0

* Records are for seven days for all stations except Maine, which used four-day records.

The seventh and eighth grade children studied in New York gave intakes by dietary history which were, depending on the nutrient, 25 to 35 per cent higher than those recorded in the seven-day record. Junior high students at Maine reported intakes by history method which were on the average 27 to 60 per cent higher, depending on the nutrient, than they recorded in their four-day records. If one took records as representative of the intake of the children, it would appear that children of these age groups who had not been previously schooled in keeping dietary histories or trained to be aware of their food intake ought not be counted on for reliable estimates of their intake by the history method.

On a percentage basis, Rhode Island and West Virginia, both of whom studied college students, had the best agreement of results from the history and seven-day record methods. Agreement was generally within 10 per cent, vitamin A being a consistent exception. Even this exception was of considerably smaller magnitude than that for the other

population groups studied. Most of the students studied were women at both colleges. Inquiry reveals that of the 67 college girls in Rhode Island, 55 were home economics students and the remaining were nursing students enrolled in home economics classes. The majority lived in dormitories. Of the West Virginia sample, 49 of 51 women were enrolled in home economics classes. The remaining 2 were pre-medical students, as were 8 of the men. It could be reasoned that home economics students are more food-conscious and able to give a more accurate picture. Also, the results could be a reflection of the more routine eating in a dormitory where a fairly consistent menu pattern may have been followed. The underestimation of thiamine and overestimation of calcium in Rhode Island sounds characteristic of the college girl who thinks she drinks more milk and eats less bread, and less calories, than she actually does.

Results from the pregnant women, homemakers, and male industrial workers were in an intermediate position, but the history gave consistently and substantially higher estimates than the seven-day record. The results discussed here make it look as if the only group for whom history and seven-day record might be expected to give similar estimates would be one which has become particularly able to estimate the quantity of food eaten.

Again, the mean difference between estimates obtained by the two dietary methods for most nutrients in most states was highly significant. In states dealing with college students, Rhode Island and West Virginia, the mean differences for roughly half of the nutrients were not significant. Thus, on the average, there was conclusive evidence that the history yielded higher estimates of mean intake than the seven-day record, although for a specific station this conclusion cannot be taken for granted. It is of interest, and not unexpected, that vitamin A proved to be the nutrient which in every population group was most difficult to estimate in giving a history.

The difference between the methods for a specific nutrient from station to station was studied by analysis of variance. These differences, if they exist, would be due to the different type of subjects studied at each station or possibly differences in skill of the interviewers. The hypothesis that the differences between the two methods were the same from station to station was rejected beyond the 1 per cent level for all nutrients except vitamin A, where a difference would be apparent at approximately the 7 per cent level. In other words, the test revealed the same results as found when percentage differences were examined: the correspondence between history and the seven-day record varied with the type of subject studied assuming approximately equally skilled interviewers. For vitamin A, the variation between the methods was of large magnitude regardless of the type of subject.

Prediction from One Method

The question was raised: Could the intake of an individual as judged by one method be used to predict the intake which would have been calculated had the other method been used? The answer to this question was based on a study of the correlations found between the two methods. Are the correlations sufficiently high that, given the intake by the history method, one could predict the value given by the seven-day record within a reasonable degree of accuracy? This question was answered by determining what correlation between methods was required to give a predicted value with 95 per cent confidence limits on either side, equal to 20 per cent of this value. Such calculations showed the correlations required are much higher than those found in this study. Consequently, prediction of intake by one method by projecting values for the other method to any practical degree of accuracy is virtually impossible.

SUMMARY

Using data from five northeastern states representing seventh, eighth, and ninth grade, high school, and college students, pregnant women, and male industrial workers, a comparison was made between dietary intakes as obtained by dietary history and by seven-day records for the same subjects. In the case of an additional state studying junior high school students, comparison was between history and four-day record.

It was found almost unanimously for all population groups studied and for ten nutrients that the dietary history did not give the same estimate of intake for an individual as the seven-day record.

For the mean of a group, the dietary history gave distinctly larger values than the seven-day record when applied to seventh, eighth, and ninth grade children, to pregnant women, and to male industrial workers. Differences between methods when applied to college students (primarily home economics students) living and eating in college dormitories were much smaller. However, it was impossible to ascribe the amount of variation due to age and the type of subject, to eating circumstances, and to the relative skill of the interviewer.

In a comparison of dietary history and four-day record using junior high students, the history method was found to give significantly higher estimates for all nutrients.

It is virtually impossible to predict the intake for an individual as estimated by a seven-day record from his dietary history with any practical degree of accuracy.

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Graham Lusk—February 15, 1866—July 18, 1932

The student of the history of nutrition is indebted to Graham Lusk for the only book on the subject. In his later years, Lusk's chief hobby was the history of nutrition. From a lifetime of experimental investigation, continuous reading of scientific literature in five languages, and close personal acquaintance with Voit, Rubner, and other leaders of the day, Lusk enriched his lectures to students and wrote many biographical papers. His book *Nutrition* in the Clio Medica series is a brief but masterly history of the subject. The manuscript was completed just a few weeks before his death on July 18, 1932.

Graham Lusk was born in Bridgeport, Connecticut. His father, William Thompson Lusk, was a distinguished obstetrician and author who had hoped to see his son become a physician also, but because of impaired hearing he advised his son to study physiology. Graham Lusk graduated in chemistry from Columbia School of Mines (1887) and went to Germany where he studied under Carl Voit at Munich, receiving his doctorate in 1891. On his return to America, he became Instructor and then Professor of Physiology at Yale Medical School. In 1898 he was appointed Professor of Physiology at Bellevue Medical College in New York, and in 1909 he went to Cornell University Medical College where he remained until a few weeks before his death. E. F. Du Bois was his co-worker for twenty years in metabolism studies and for fourteen years J. R. Murlin was his pupil, assistant, and colleague.

Lusk's *Elements of the Science of Nutrition*—the first edition of which was published in 1906 and the fourth in 1928—laid the foundation for the development of the science of nutrition in this country. Lusk not only interpreted the work of the German investigators, but carefully checked every figure and every reference; his was the ability to synthesize the work of others into a scientific body of knowledge. The familiar picture to students and colleagues was Lusk at his desk surrounded by journals and large sheets of yellow paper. His own research and scientific papers extended to 158 publications.

He was the pioneer in animal calorimetry in this country; he had a respiration calorimeter built in which he could study the metabolism of animals and children in health and disease. Major problems of study were diabetes, specific dynamic action of foodstuffs, and the role of the amino acids. During World War I, Lusk wrote on food in wartime and caloric needs of children; he secured for adolescent children a food allowance equal to that of adults.

Lusk was not only a great physiologist and careful research worker but also a great teacher; his lectures were prepared with this same care as were all his writings. The Society for Experimental Biology and Medicine (1903) and the Harvey Society (1905) were formed in Lusk's library; he also helped found the Society of Biological Chemists (1906) and the American Institute of Nutrition (1928).

Lusk was of average height, with brown hair and piercing eyes with a humorous twinkle; he was always cheerful, a genial host who loved conversation and enjoyed a good controversy. In science he had an open mind and sought only the truth. He was never too busy to help younger men and worked vigorously for the improvement of medical education.

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—Contributed by E. Neige Todhunter, Ph.D., Head, Department of Foods and Nutrition, University of Alabama, Tuscaloosa.

Facilities of the Library of Congress

Their Use in Studying the History of Nutrition[1]

BURTON W. ADKINSON, Ph.D.

Director, Reference Department, The Library of Congress, Washington, D. C.

THE vast resources of the Library of Congress offer a wealth of material for the study of the history of nutrition and for the broader subject of man and his food in various parts of the world, whether this be interpretation in the light of our present knowledge of nutrition, or the effects of food habits and food supply on cultural, political, or economic developments of a people.

It is through the efforts of specialists with biographic, geographic, and historic approaches to various problems that the extent of the Library of Congress' collections is realized and appreciated. As problems are presented for study and research, those who work in the Library are continually impressed with the resources in the general and numerous special collections. For example, one working in the history of nutrition will find much of value in some of the earliest accounts of producing and preparing food in this country as well as in the most recent research reports on improving the nutrient value of food by plant breeding guided by chemical control. Greater extremes of nutritional interest to be found in the Library's Division of Orientalia would be a copy of the *Famine Herbal*, a treatise on plants fit for supporting life in times of scarcity, compiled in China in the early part of the fifteenth century, and a 1947 issue of the *Chinese Journal of Nutrition*.

Before describing more fully the resources of the Library in this field, mention should be made of some of the bibliographic tools and facilities for study in the Library of Congress and some of the means by which this material is made available to research scholars throughout the country. Greatest satisfaction is, of course, gained by those who can come to the Library and consult the catalogs and other research tools and volumes directly. Study rooms and tables are made available to qualified research groups and scholars when specific arrangements are made in advance. These may be used during the usual hours that the Library is open. Assignments are made for the period of one week and renewals may be made depending upon the justification of such requests.

CATALOGS

Of primary importance in any bibliographic work are the catalogs which serve as keys to the Library's collections. In these catalogs, the books are entered under the names of their authors, who may be individuals or corporate bodies; under their titles, when such are distinctive or helpful for their identification and location; under their subjects; and under their series, when the books belong to important series. The catalogs include various cross references which serve as guideposts to direct the reader to the desired and related entries. All of these entries—author, title, subject, series, and cross references—are arranged in one alphabetical order and serve to show, generally, which works the Library has by a given author, of a given title, or in a given series.

The printed catalog cards of the Library of Congress are sold to 8000 libraries, firms, and individuals. Two widely-used Library publications are the monthly author catalog and the quarterly subject catalog. The entries in both of these are reproduced from the type set for the Library's catalog cards and each is cumulated annually.

A few Library of Congress bibliographic publications used in scientific research might be mentioned. Among these are: *Atomic Energy—Significant References; Serial Titles Newly Received; Monthly Checklist of State Publications; The United States Quarterly Book Review; Monthly List of Russian Accessions;* and the Library of Congress *Quarterly Journal of Current Acquisitions.*

Located in the Library of Congress is the National Union Catalog which is a guide to the books available in American and Canadian libraries. This catalog, maintained through cooperation with other libraries, records the holdings of over seven hundred institutions and is extremely useful in interlibrary loans. Entries in this catalog are by author only.

In general, only individually published works are

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 11, 1951.

entered in the Library of Congress catalogs. For guidance to the periodical literature, it is necessary to consult the indexes and text in such journals as *Chemical Abstracts*, *Biological Abstracts*, and *Nutrition Abstracts and Reviews*. The *Readers' Guide to Periodical Literature* covers the more popular articles. Current issues of periodicals are available in the Library's Periodical Reading Room. The bound volumes are shelved in the stacks according to the Library of Congress classification scheme and are called for in the reading rooms in the same manner as books. Reference assistants are always ready to suggest other bibliographies and research tools which are available and to aid in locating additional material.

SERVICES IN THE FIELD

A number of services have been established to make the collections and facilities of the Library available to research workers unable to come to Washington. Arrangements can be made with university, institution, or public libraries to have specific books not otherwise available sent on interlibrary loan from the Library of Congress.

One of the most widely used of the Library's research facilities is that offered by the Photoduplication Service whereby photoduplicates of material in the Library's collections can be purchased for research use, subject to copyright restrictions. Through this service, copies of single articles or of entire issues, rare books, manuscripts, and correspondence not available on a loan basis can be supplied through photostats, photographs, or microfilm.

On the subject of duplicating techniques, brief mention might be made of the program of the Science Division for research in documentation techniques and devices, such as industrial television and facsimile transmission for making information in the Library more readily available to agencies in the Washington area. This is one part of a broad plan to promote fuller use of the resources of the Library of Congress in science and technology. Surveys are in process for more effective identification of the holdings in these fields, and this information will be brought to the attention of scientists and those who serve their information needs. The RCA flat-bed facsimile transmitter and receiver developed for use at Oak Ridge make possible the delivery of copies of material in the library there to the laboratory 7 mi. away. This equipment is still in experimental stages, but it is hoped that in the near future a transmitter will be installed in the Library of Congress to serve the Washington area. There is no technical reason why this could not eventually serve the country through existing networks.

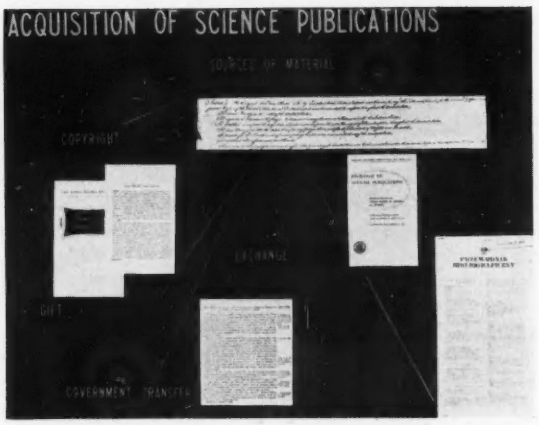
Another recent development is the use of industrial television for library "browsing." With this equipment, the library assistant, with the television camera over her shoulder, will go through all the catalog cards under requested subject headings. Such viewing at considerable distance from the Library would be a great convenience to the busy researcher in selecting specific references. This equipment has been ordered for research in documentation in the Science Division.

Another new technique now employed by this Divison is the microcard. Many research reports are reproduced in a limited number of copies. To facilitate their distribution, a microreproduction is laminated on the reverse of the catalog card. Thus the card catalog will contain not only the entry of the report but also the report itself. These cards have been enthusiastically received by librarians and research scientists. At present, however, this service is available only to institutions authorized by the Office of Naval Research.

Another important Library service is that provided to correspondents. Because the Library cannot possibly handle all the requests it receives for information and assistance, reference service to correspondents is governed by a definite policy and priority system. Inquiries from members of Congress are answered first, service to government agencies comes next, and reference work for other inquirers is provided insofar as the Library finds it possible to do so. In requesting assistance, the inquirer must state the problem specifically with an indication of local library facilities that have been searched.

CONTROL OF COLLECTIONS

The Library's collections, containing an estimated 28 million pieces, including volumes, pamphlets, bound newspapers, manuscripts, maps, photographs, pieces of music, records, and films, present tremendous problems of organization and storage. Many people and much work are required to maintain control over this wide variety of material from the time it is received or requested by the Library, through identification by descriptive and subject cataloging and integration into the collections.



Sources of material received by the Library of Congress

Library material is received through the sources shown in the illustration, namely, through established gift and exchange arrangements with organizations and governments, through copyright deposit, and through purchase. In the purchase of books, it was recognized a few years ago that all libraries (even the large ones) could not buy all foreign books, and a number of research libraries agreed on the Farmington Plan which divides the responsibility for acquisitions according to the subject specialties of the participants.

Because of language, format, or special storage requirements, such as those needed for the rare books, for example, certain collections have been assigned to certain Divisions. Other Divisions, such as Science, Slavic, and European Affairs, have been established on the subject or area specialty basis, although the actual material in these fields might be located in a number of collections. This type of unidivisional interest in the materials housed in a number of divisions was illustrated recently in a group of exhibits arranged throughout the Library. At the suggestion of the Science Division, material of interest to chemists from the Manuscripts, Rare Books, Map, Prints and Photographs, and Orientalia Divisions, and the Hispanic Foundation was on display in connection with the Assembly of the International Union of Pure and Applied Chemistry in Washington.

REFERENCE DEPARTMENT

Mention should be made of a few resources of some of the divisions of the Reference Department and possibilities that might be explored for information on the history of nutrition. The Science collections in the Library, including certain special collections, total 1,006,664 volumes from the following general classifications: Science—Class Q, contains 340,050 volumes; Medicine—Class R, 148,691 volumes; Agriculture—Class S, 163,076 volumes; and Technology—Class T, 354,847 volumes. These represent one of the largest assemblies of literature on science and technology. However, although the Library's holdings in medicine and agriculture are considerable, the Army Medical Library and the Department of Agriculture Library are depended on for complete coverage, as they are the national libraries in these fields.

Periodicals are received from all over the world. There are an estimated 40,000 serial titles in science and technology, and of these a considerable number—many technical and industrial publications, as well as those devoted entirely to nutrition or basic sciences—would be of interest to dietitians and nutritionists.

In the Government Publications Reading Room are a vast number of the current official publications from our own and other countries. Here may be found all the current reports and bulletins from the Department of Agriculture, the reports from the individual states on agriculture and nutritional surveys, and similar reports and studies from foreign governments. This section also has all the United Nations publications, including those of the Food and Agriculture Organization, its surveys, and current reports. For comparative studies, there are the reports of the League of Nations Mixed Committee on Relations of Nutrition to Health, Agriculture and Economic Policy.

RARE BOOKS DIVISION

The Rare Books Division contains a wealth of very early books and incunabula essential in any historical research. Probably the most important single collection in the Library for the study of the history of nutrition is the Katherine Golden Bitting Collection on gastronomy presented in her memory by her husband and co-worker, Dr. A. W. Bitting. The collection is of great intrinsic interest and value, since it comprises materials on the sources, preparation, and consumption of foods; their chemistry; bacteriology; preservation; and so on, from earliest times to the present day. But it is also of extreme interest as reflecting the unusual career of an extraordinary woman and early investigator in this field.

Her *Gastronomic Bibliography* contains over 5000 items, of which more than half were represented in her collection. They include the whole range of human history and the whole gamut of human interest in food editions of the earliest treatise on the culinary art by Coelius Apicius; writings of medieval and Renaissance students of food plants and diet, such as Estienne and Nonnus; of great cooks, such as Bartolomeo Scappi, cook to Pope Pius V, and of Escoffier; of great epicures, such as Brillat-Savarin and Alexandre Dumas; of modern investigators whose researches have made present day foods possible, such as Louis Pasteur and Nicolas Appert, the founder of the modern canning industry. Even tales of travelers which describe the food habits and customs of other countries or times, accounts of religious rituals in which foods have played a part, menus, and cookbooks are not alien to Dr. Bitting's bibliography or to her library. One item of special interest in the Bitting Collection is the Martino manuscript of early recipes, probably written in Italy about 1450, the title-page of which is illustrated. The entire Martino text translated verbatim appears as part of Platina's *De honesta voluptate* published in 1474. This latter is considered the first book on gastronomy; incidentally, this collection contains four editions of this early work.

The Gerarde herbal dated 1633, London, contains this comment regarding spinach: "It is eaten boiled but it yeeldeth little or no nourishment at all: . . . It is used in sallads when it is yong and tender" (see illustration).

MAGISTRI MARTINI, ARCHEMAGIRI,
LIBER DE ARTE COQVINARIA
MANVSCRIPTVM ROMÆ, CA. MCCCCL

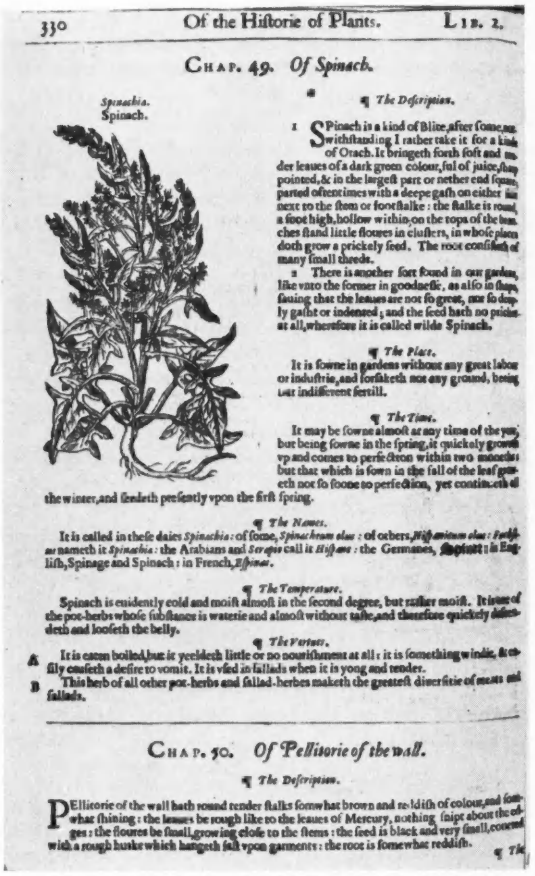
En uerò ipsum MARTINVM, amicum suum, cuius mentionem facit PLATINA in libro suo DE honesta Voluptate, impressum, Romae, ca. ans Mcccclxv. Puto, itaque, hoc librum MARTINI scriptum esse ca. ans Mcccc L - ++++
Vide PLATINA, Lib. vi, Cap. Cibaria alba, qui ait: Quem coquum, dij immortales, Martino meo Comensi conferes? à quo hanc quæ cibo magna ex parte sunt habita. Carnesdem alectum dies, fidelibus propositis ex tempore disserentem audieris.
inventimus, Chicago MCMXXVII ++++++++
Alium MARTINI exemplarem, scriptum, ca MDXXV, inter libris BARON PICHON vidimus. Hoc, ita, praesens archetypum esse mihi persuasum est ++

Paginae CXXX, totae ex Meo Magistri, qui est repositum inter libris culinariis meis, photographice imitavit

IOSEPH DOMMERS VEHLING
CHICAGO
MCMXXVIII

DEO soli gloria, sed gratias excellentissimo magistro

Title page of Martino manuscript of early recipes, from the Bitting Collection.


330 Of the Historie of Plants. Lib. 2.

CHAP. 49. *Of Spinach.*

Spinachia. Spinach.

¶ *The Descripion.*

1 SPinach is a kind of Blite, after some, notwithstanding I rather take it for a kinde of Orach. It bringeth forth soft and tender leaues of a dark green colour, ful of iuice, sharp pointed, &c in the largest part or nether end square, parted often times with a deepe gash on either side next to the stem or foote stalke: the stalke is round, a foot high, hollow within, on the tops of the branches stand little floures in clusters, in whose place doth grow a prickely seed. The root consisteth of many small threds.

2 There is another sort found in our gardens, like vnto the former in goodnesse, as also in shape, sauing that the leaues are not so great, nor so deeply gasht or indented; and the seed hath no prickles at all, wherefore it is called wilde Spinach.

¶ *The Place.*

It is sowne in gardens without any great labour or industrie, and forsaketh not any ground, being not indifferent fertill.

¶ *The Time.*

It may be sowne almost at any time of the yeare, but being sowne in the spring, it quickely groweth vp and comes to perfection within two monethes: but that which is sown in the fall of the leaf groweth not so soone to perfection, yet continueth all the winter, and fetcheth perfectly vpon the first spring.

¶ *The Names.*

It is called in these daies *Spinachia*: of some, *Spinachium olus*: of others, *Hispanicum olus*: Fuchsius nameth it *Spinachia*: the Arabians and *Serapio* call it *Hispane*: the Germanes, Spinat: in English, Spinage and Spinach: in French, *Espinar*.

¶ *The Temperature.*

Spinach is evidently cold and moist almost in the second degree, but rather moist. It is one of the pot-herbs whose substance is waterie and almost without taste, and therefore quickely deiecteth and looseth the belly.

¶ *The Vertues.*

A It is eaten boiled, but it yeeldeth little or no nourishment at all: it is something windie, & easily causeth a desire to vomit. It is vsed in sallads when it is yong and tender.

B This herb of all other pot-herbs and sallad-herbes maketh the greatest discrietie of meats and sallads.

CHAP. 50. *Of Pellitorie of the Wall.*

¶ *The Description.*

PEllitorie of the wall hath round tender stalks somwhat brown and reddish of colour, and somwhat shining: the leaues be rough like to the leaues of Mercury, nothing snipt about the edges: the floures be small, growing close to the stems: the seed is black and very small, couered with a rough huske which hangeth fast vpon garments: the root is somewhat reddish.

¶ The

Page on spinach from the Gerarde herbal dated 1633

The first American edition of *One Thousand Valuable Secrets in the elegant and useful arts collected from the practice of the best artists and containing an account of the various methods*, printed in Philadelphia in 1795, contains secrets covering a wide range of subjects, a number being devoted to wines and vinegars. Under "Secrets relative to wine" is a method for making people drunk without endangering their health. This is followed by means to restore a person from intoxication. Suggested are vinegar, cabbage juice, honey, warm wine, or strong coffee. The opposite page bears the chapter heading "Concerning the Composition of Vinegar." Another chapter entitled "Secrets Relative to the Confectionary Business" seems to be more like a cook book. Directions are given for summer compotes and stewed fruits, geneva paste, jam, macaroons, Queens' biscuits, and "a method of making cakes exceeding fine."

GRAPHIC MATERIALS

Another collection of several hundred books on early cookery and food preparation, also containing some very early imprints, is that assembled by Elizabeth Robbins Pennell. This is housed in the Prints and Photographs Division with the other Pennell collections. While there were earlier books on gastronomy, the 1498 edition of Coelius Apicius was considered by Mrs. Pennell to be the earliest on cookery. Great possibilities for illustrative material can be found in this Division whether it be of individuals, places, or processes. The photographic record of an economic survey of the United States, the Farm Security Agency collection, is filed here. A few headings from the index to this group of pictures give an indication of its scope and of photographs that would result from such a survey: Army food rations, bakeries, canning, cold storage, dehydrated foods, and so on. Another source of graphic material is the Map Division where maps showing world distribution of wheat and other grains, sources of food and agricultural products, and spices, can be found.

The Manuscripts Division is most useful in biographic studies as many private papers, letters, and other documentary materials have been deposited in the Library of Congress. Early correspondence and accounts of expeditions and explorations contain

much descriptive material and unquestionably contain references to food and food problems of particular periods and areas.

FOREIGN COLLECTIONS

Mentioned earlier were two examples of material in the Chinese Section of the Orientalia Division. A search of the Library's Japanese holdings indicates forty to fifty postwar monographs on nutrition, such as *Outline of Nutrition*, *Vitamin C in Foods*, and *Foods for Patients*. The catalog of the Japanese collection records prewar publications not strictly on nutrition but in this general field, including seventeen volumes of a series of lectures on food and food preparation, scientific and otherwise, and some history of cooking in Japan. Six Japanese journals on this subject are currently being received; two of them, the *Japanese Journal of Nutrition* and the *Journal of the Japanese Society of Foods and Nutrition*, give the English title for each article.

In the Slavic collections are numerous accounts of exploration of Northern Siberia and the diet of the natives (which included mammoth on one occasion in the 1870's) and more recent information on the Ukraine famine in the late twenties as told by exiles and travelers. Much has been recorded of Russian studies on quick-maturing food crops, storage of indigenous foods, and dietary supplements, both local and synthetic, to meet the problem of nutrition in the North. A unique source of information is the record of experiments (and efforts) to maintain populations in these northern regions where, for climatic reasons, ordinary food is not available and nutrition is the limiting factor in the development of these areas.

Also available in the report collections of the Library are the results of our own wartime research on emergency rations, special rations for arctic and tropical conditions, and the numerous studies on nutrition done under contract with the office of Scientific Research and Development. Results of much of the current research done under Defense Department contracts—which would certainly include nutrition—are available only to eligible persons working with or for the military establishment.

An attempt has been made to give an over-all picture of the facilities of the Library of Congress and an indication of some of the material in the collections which would be of interest and value in studying the history of nutrition. Only a small part has been mentioned; there is a great deal more: information on food habits in primitive culture, on vitamin studies from early accounts of deficiencies to current research, on the development of pure food legislation and group feeding programs, and the more recent nutrition surveys and food enrichment programs. The Library of Congress encourages research workers, teachers, and historians to use its facilities and collections to greater advantage.

Frozen Foods in Europe

Homemakers abroad are still dubious about frozen food's practicality, states E. W. Williams, publisher of *Quick Frozen Foods* (14: 41 [Sept.], 42 [Oct.], 1951). Refrigerators are not as common in Europe as in America; therefore, the housewives consider frozen products strictly in the luxury class and not too good to eat. Lack of advertising and sales promotion is the principal factor which Mr. Williams believes to be at the root of the difficulty. Conservative England, farthest ahead of all European countries in acceptance of frozen foods, is on a level with America in 1936 as far as production and sale are concerned.

Spinach, peas, and orange juice concentrates are about the most popular in England, and ice cream is beginning to win favor. The latter must be sold at stands and amusement places, as homemakers usually have no freezing or storage facilities for it at home. Small packages of vegetables and other items, suitable for two people, are selling fairly well in London, but on the whole high prices, lack of large display cabinets in stores, and most important, lack of impetus to buy, are impeding the progress of England's frozen food industry.

Next in progress to England are Holland, Denmark, and perhaps Sweden and Norway. Switzerland has become fairly productive; Germany and France are still far behind, although Army food buyers in Germany find frozen foods dependable where fresh foods are not. France, generally deficient in ascorbic-acid-rich products, has adopted frozen orange juices to some extent since World War II.

Mechanized equipment, which cuts overhead, is the solution recommended for lowering prices—and thereby arousing in the European housewife the *desire* to buy, without which advertising is futile.

Yield of Home-Frozen Fruits and Vegetables[1]

ELSIE H. DAWSON and GLADYS L. GILPIN

Bureau of Human Nutrition and Home Economics, Agricultural Research Administration, U. S. Department of Agriculture, Washington, D. C.

DIETITIANS, school lunch managers, others responsible for procurement of food for group feeding, home economists, and homemakers often need data on yield of prepared food from fresh. Information of this kind is useful in estimating the weight and measure of usable parts of foods to be expected from fresh produce purchased either wholesale or retail. However, at best, such data can serve only as a guide to approximate quantities to buy for any given purpose.

Yields vary greatly with the condition, quality, size, variety, and maturity of fruits and vegetables. Volume measurements of prepared food may vary because of the size of the measuring unit used and the way the food is packed in the measure by different individuals. Loss in preparation of fruits and vegetables may vary also with intended use. For frozen foods, yields in terms of number of packages are further affected by the form in which the foods are frozen—whole, sliced, in cubes or other pieces, or puréed; by the kind of pack—unsweetened or with added sugar or sirup; and by the size and shape of the container.

Present available data on refuse have been summarized for a large number of foods in connection with food composition tables (1). Such average figures do not indicate the variation that may exist because of size, quality, and condition of food.

In Table 1, data are presented on yields found for eight fruits and seven vegetables as prepared for freezing and as frozen. The table also gives average figures for volume and weight equivalents of these foods as purchased and after preparation for freezing. The data are summarized from home freezing studies.

The fruits and vegetables were carefully prepared according to directions for home freezing developed by the Bureau of Human Nutrition and Home Economics (2). Discarded parts of fruits not suitable for freezing included skins and pits of avocados; rind and cavity contents of cantaloupes; stems only for whole unpitted cherries; stems and pits for pitted cherries; stems, pits, and losses in the food chopper for crushed cherries. Preparation losses for frozen orange juice included rinds, seeds, and pulp which did not go through the strainer. Discolored parts, skins, and pits of peaches were discarded. For frozen pineapple, the crown, core, woody parts, and parings were discarded. Stems, caps, and soft berries were removed in the preparation of strawberries for freezing, and some of the seeds and pulp were removed in making strawberry purée. Rinds and seeds of watermelon were discarded before cutting it into cubes for freezing.

In preparing vegetables for home freezing, the stem and tip ends of snap beans were cut off, and the coarse outer leaves of Brussels sprouts were removed. Leaves, leafstalks, and the main stalk of cauliflower were discarded. Leaves and root end of celery were not used for freezing. For frozen green peppers, stem, core, and seeds were discarded before cutting into strips. Parings and eyes were removed before cutting the potatoes into strips. For frozen spinach, large, tough stems and yellow leaves were not used.

In most cases the produce was purchased from local grocery stores and varied considerably in quality. The peaches were obtained from the Bureau of Plant Industry, Soils, and Agricultural Engineering. When received in the laboratory, the products were graded in four quality classes—very good, good, fair, and poor—based on maturity or ripeness, freshness, and general acceptability for freezing. Since most of these products were prepared primarily for the purpose of obtaining volume and weight equivalents, fair quality produce was used in some instances because it was the only type available. For high quality frozen products only the best quality raw material is recommended; lower quality produce may be acceptable for immediate home use.

Because the yield of frozen food varies with the quality and condition, maturity, and variety of the fresh produce, more information of this kind is needed to make accurate estimates of the amount of fresh food to purchase for a given quantity of frozen food, to judge how much packaging material to have on hand, how much freezer space is needed, and to help estimate the cost of home-frozen food.

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[1] Received for publication October 8, 1951.

TABLE 1

Yield of raw, prepared, and frozen food from eight fruits and seven vegetables

FOOD AND QUALITY AS PURCHASED	APPROXIMATE WEIGHT AS PURCHASED	FORM OF PREPARATION	YIELD OF FOOD AS PREPARED FOR FREEZING		FROZEN FOOD		TYPE OF FROZEN PACK
			Per cent by weight	Weight of 1 qt.	Amount of food as purchased for 1 pt. frozen food	Amount of raw prepared food for 1 pt. frozen food	
Fruits							
	lb./unit			*lb.*	*lb.*	*lb.*	
Avocados							
Fair	0.49/unit	purée	73	—	1.47	1.07	unsweetened
Cantaloupe							
Very good	2.34/unit	½-in. cubes	67	1.45	1.25	0.83	sirup
Very good	—	crushed	64	2.18	1.78	1.13	unsweetened
Cherries, Bing							
Very good	1.36/qt.	whole, unpitted	96	1.59	0.60	0.57	sirup
Very good	1.29/qt.	whole, pitted	79	1.28	0.61	0.48	sirup
Very good	1.29/qt.	crushed	70	2.27	1.26	0.88	sugar
Oranges, Florida							
Good	0.42/unit	juice	44	2.01	1.78	0.78	unsweetened
Peaches							
Very good	(large)	sliced (pared by hand)	78	—	0.84	0.66	sirup
Very good	(large)	sliced (pared by hand)	70	1.50	1.08	0.75	water
Very good	(large)	sliced (pared by hand)	72	1.56	1.26	0.91	sugar
Poor	0.28/unit	sliced (pared by hand)	55	—	—	—	—
Very good	(large)	chopped (peeled after hot water dip)	87	—	1.08	0.94	sugar
Very good	(large)	crushed (peeled after hot water dip)	83	—	1.06	0.88	sugar
Very good	(large)	purée (peeled after hot water dip)	84	—	0.94	0.80	sugar
Pineapple							
Very good	2.61/unit	wedges	48	1.26	1.16	0.56	unsweetened
Fair	2.56/unit	wedges	40	1.12	1.40	0.56	sugar
Strawberries							
Good	0.99/qt.	whole	94	1.27	—	—	—
Fair	1.38/qt.	whole	60	1.11	1.34	0.81	sugar
Good	0.99/qt.	sliced	93	1.48	—	—	—
Fair	1.44/qt.	sliced	66	1.26	0.96	0.63	sugar
Good	0.99/qt.	crushed	92	1.52	—	—	—
Good	0.99/qt.	purée	77	2.08	1.13	0.87	sugar
Watermelon							
Very good	30.34/unit	¾-in. cubes	45	1.24	1.69	0.76	sirup
Vegetables							
Beans, snap							
Very good	—	1-in. pieces	94	1.10	0.58	0.55	dry
Good	0.58/qt.	1-in. pieces	89	0.95	0.61	0.55	dry and brine
Brussels sprouts							
Fair	0.92/qt.	whole	71	0.87	0.92	0.65	dry
Cauliflower, garden style							
Very good	4.08/head	1-in. flowerets	18	0.79	2.72	0.50	dry
Cauliflower, grocery style							
Very good	2.22/head	1-in. flowerets	34	0.79	1.48	0.50	dry
Celery							
Very good	—	½-in. lengths	58	1.00	0.86	0.50	dry
Peppers, green							
Very good	0.21/unit	strips, ½-in. wide	76	0.75	0.66	0.50	dry and brine
Good	0.25/unit	strips, ½-in. wide	71	0.82	0.68	0.49	dry
Potatoes							
Very good	—	⅜-in. sticks	87	—	0.88	0.76	dry
Spinach							
Good	0.38/qt.	leaves	81	—	1.14	0.92	dry

Catharine Beecher, Founder of Home Economics[1]

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HOME economists, in referring to the development of the home economics movement, frequently have overlooked the contributions made by Catharine Beecher to this subject prior to 1878. Miss Beecher's name more commonly is associated with the history of women's education. Many apparently have not recognized her achievements which provided a foundation for the work of Ellen H. Richards and her associates in the development of a permanent organization two generations later. In turn, it has been utilized by many present-day leaders in extending the home economics movement both nationally and internationally.

CATHARINE BEECHER'S EARLY LIFE

Catharine Beecher was the eldest child of Dr. Lyman and Roxanna Foote Beecher. She was born September 6, 1800, at East Hampton, Long Island, and died May 12, 1878, at Elmira, New York.

Lyman and Roxanna Beecher were outstanding people, and their children also were remarkable in their development and individual attainments. Seldom is it found that a father of the repute of Lyman Beecher has several sons and daughters who also become outstanding leaders. More than half of his eleven children who grew to maturity became famous. Two became pre-eminent. In fact, Harriet and Henry Ward are the only two members from a single family who are recognized in the Hall of Fame. Catharine Beecher has been acknowledged as an outstanding leader in education for women during the nineteenth century.

Catharine Beecher gives her personal evaluation of her early home life in *Educational Reminiscences and Suggestions* (1). A happy, simple, and unpretentious home with parents devoted to each other and to a large family of children was a significant part of her early background. In spite of the meager circumstances of the Beecher family, Catharine was given all available educational advantages. She gained an appreciation for the artistic and the practical; she was encouraged to be original in thought, courageous in action, and to develop a critical mind in controversial issues. Hers was a type of home background which stimulates and promotes leadership. Catharine Beecher's education followed the traditional pattern customary in the early 1800's. She first received instruction at home and later attended Miss Sarah Pierce's Female Academy at Litchfield, Connecticut.

MISS BEECHER AND EDUCATION FOR WOMEN

The era in which Catharine Beecher lived was a century characterized by widespread social, economic, and intellectual ferment. Her career and philosophy were the products of the society in which she lived. During her lifetime a new nationalism was developing in the United States, and a zeal for political, social, and humanitarian reforms affected virtually every phase of American life.

The limited education available to girls was a matter of concern to Catharine Beecher. She crusaded continuously for the improvement of education for women. When only twenty-one years old, her initial contribution was made by the establishment of the Hartford Female Seminary at Hartford, Connecticut. This institution was a high school for girls, the second of its type in the United States, and proved to be highly successful. The advanced curriculum and the excellence of teaching provided here served as a model for other such schools.

Catharine Beecher was doubtful concerning the success of her female seminary. She was inexperienced and young. Traditionally, higher education was considered appropriate for men only, and it was customary for the teaching to be done by a schoolmaster. Higher education for women had become neither an established concept nor an accepted practice, and consequently she had no precedent to follow. Like her contemporaries—Emma Willard, Zilpah Grant, and later, Almira Lincoln Phelps and

[1] Summary of research completed in partial fulfillment of the degree of Doctor of Education, Colorado State College of Education, Greeley.

Mary Lyon—Catharine Beecher had an invincible pioneer spirit. In contrast to the careers of these women, she devoted her entire life to the promotion of the education of women. In 1836, Emma Willard retired from the active management of the Troy Female Seminary, and in the following year Zilpah Grant resigned from the Ipswich Academy and married. Mary Lyon lived only twelve years after she had established Mount Holyoke Seminary. On the other hand, Catharine Beecher never retired.

From 1821 to 1878 she crusaded continuously, establishing higher educational institutions for women and publicizing her philosophy concerning the high place which domestic economy should occupy in education. Much of the credit for the introduction of home economics, for higher education for women, and for the fact that these movements did not lose momentum during the middle nineteenth century may be credited to her leadership. While other educational leaders confined their endeavors to their schools in New England, Catharine Beecher, after gaining experience in establishing the Hartford Female Seminary, devoted her life to a nation-wide program.

Her activities in women's education paralleled the trend of the times. In 1831, Lyman Beecher and his family moved to Cincinnati. Keenly aware of the educational problem involved in the westward migration then taking place, Catharine Beecher drew up a program for the Western Female Institute at Cincinnati, which would prepare teachers and serve as a distribution center for teachers from the East who wished to go West.

When that school closed because of inadequate funds, she conceived a definite plan for permanently endowed institutions of higher learning for girls and found supporters for the establishment of female normal institutes and high schools in the Mississippi Valley. An outgrowth of this activity was the American Woman's Education Association which was organized by Catharine Beecher in New York City to sponsor endowments for women's colleges. As a result of her work, normal institutes were started at Burlington and Dubuque, Iowa; at Quincy, Illinois; and at Milwaukee, Wisconsin. Milwaukee-Downer College, located in the last city, is the outgrowth of the only one which survived and today is a monument to this program.

In a period when many of her contemporaries were seeking to enlarge the concept of democracy through suffrage, Catharine Beecher contended that women should not endeavor to gain equality by competing with men. She claimed that homemaking was woman's true profession and, just as men could prepare for their professions in colleges, women also should have an opportunity to prepare for their calling. "Domestic economy," now referred to as "home economics," was the title Catharine Beecher gave the professional course which she was proposing. Later, as the knowledge of science developed, she adopted the term "domestic science."

A PHILOSOPHY FOR HOME ECONOMICS

Catharine Beecher had a philosophy concerning the high place which domestic economy should occupy in education and earnestly labored to arouse the interest of citizens throughout the nation in this subject. This was stated in her first article, "A Plan for Improving Female Education," which appeared in the *American Journal of Education* in 1827. The theme is again incorporated in the title of her last series of lectures in 1878, "The Adaptation of Woman's Education to Home Life." She believed that if the science and practice of domestic economy were raised to its "appropriate place as a regular study in female seminaries," woman's education would become an important national factor.

Due to the fact that the United States was endeavoring to develop a new type of nationalism in which democracy was to be the predominating philosophy, women needed to be educated for their "sphere of influence." Miss Beecher would improve the education of girls so that they as mothers might improve the next generation. As an important phase of her program, she proposed a detailed plan for this subject which she called "domestic economy." She contended that it should be included in the liberal education of girls. She would introduce domestic economy as an area in woman's education, not as a vocational subject, but together with science, philosophy, and other subjects. She utilized every possible opportunity to publicize her project, employing procedures for the presentation of her plan not unlike those used by present-day propagandists. Thus in evolving a program for woman's "true profession," Catharine Beecher became a pioneer educator in home economics.

Numerous contributions and a long list of thirty-three books, appearing from 1827 to 1874, are testimonials to Catharine Beecher's ability as a writer. Ten of these publications dealing directly with the subject matter of home economics comprise her major contribution to the literature of the field. These ten are: *A Treatise on Domestic Economy* (1841); *Miss Beecher's Domestic Receipt Book* (1842); *Letters to Persons Engaged in Domestic Service* (1842); *Letters to People on Health and Happiness* (1855); *The American Woman's Home* (1869); *The Principles of Domestic Science* (1870); *Woman's Profession as Mother and Educator* (1872); *The New Housekeeper's Manual* (1873); *Miss Beecher's Housekeeper and Healthkeeper* (1873); and *Educational Reminiscences and Suggestions* (1874). Her titles were varied as to subject, but a unity of purpose gives continuity to her work. One of the outstanding aspects of her propaganda was her persistent plea for the adoption of domestic economy as an area of instruction in

female seminaries. Apparently she never wrote an article or a book which did not in some way refer to this idea. Despite the fact that the titles of her writings might seem to have no connection with home economics, she found some provocation for digressing to this subject in the course of her discussions.

Other educators had expressed their views concerning the need for such a program, but none had expended much effort or made much progress in solving the problem. Similar subject matter had been proposed by Emma Willard in 1819 when she presented her plan for the improvement of higher education for women in American education. However, she believed that a course in what would now be called home economics could not be introduced until suitable textbooks were available. While Emma Willard retired in 1838, Catharine Beecher continued to be vitally concerned with the welfare of the family. As a solution she prepared a textbook, 369 pages in length, which appeared in 1841 as *A Treatise on Domestic Economy*. In the following year *Miss Beecher's Domestic Receipt Book* was published as a laboratory manual. Thus in the early 1840's, Catharine Beecher supplied the fundamental material which made a course in home economics possible. *A Treatise on Domestic Economy* was circulated widely, having been printed eleven times between 1841, the date of its first appearance, and 1869.

Throughout her writings, Catharine Beecher demonstrated rare foresight in her understanding of the relation of science to home economics. She maintained that science was basic to an intelligent study of the problems of the home and that the application of science was essential to good teaching in this field. Obviously she realized that her premise concerning the integration of science in the teaching of homemaking was far in advance of her time, for she also believed that domestic science would not be recognized until a generation of women had been educated. In reality, a generation later, Ellen H. Richards began her career as a scientist. Ultimately she assumed the leadership of the home economics movement in the early part of the twentieth century. Through her efforts and the work of her associates and successors, home economics has achieved an acknowledged place in education and has made marked progress in research.

CATHARINE BEECHER AND THE HOME ECONOMICS MOVEMENT

Mrs. Richards and her associates must have found much that was useful and suggestive in Catharine Beecher's books when they contemplated home economics as a subject matter field. The name "home economics," which was officially chosen while Ellen Richards was Chairman of the Lake Placid Conference, was an adaptation of the term "domestic economy" which had been copyrighted and established through the use of Catharine Beecher's *A Treatise on Domestic Economy* (1841). An exhaustive study of Miss Beecher's books provides information concerning her contributions to the home economics movement. Her philosophy of the subject is sound. She considered the homemaker to be a professional person who was a producer, a consumer, and a coordinator of home and community life. She deemed the home the most important institution in a democracy.

Catharine Beecher "staked out" the field of home economics. She considered domestic economy a body of knowledge adapted to meet the needs of the home in a changing society. Although the teaching of this subject in higher education had been her greatest concern in 1840, by 1870 she proposed that the subject be adapted to elementary and secondary levels. She urged that the state make provision for it on a permanent basis in colleges. She ardently advocated it as a field in liberal education. She believed that science was fundamental to it. Catharine Beecher approached the problem of preparing literature in the field with a professional attitude. The standards which she used in organizing her material conform to practices accepted today. She not only proposed that domestic economy be recognized as a distinct area of instruction, but her books also provided sound subject matter. Her conception of the subject was both comprehensive and inclusive.

This plan for home economics, which Catharine Beecher presented a century ago, included suggestions for adequate staff and space, both of which she considered essential. She advocated that a separate classroom, a home management house, and at least two instructors for this department, be provided. Theory and basic science were to be taught in the classroom, while the home management house would afford opportunity for the application of the art and science of homemaking in a life situation. The recruitment of teachers, which also was a phase of the "Beecher education plan," included a training school system which Catharine Beecher felt would add to the competence of teachers. "How to Teach Certain Branches of Domestic Economy," including a presentation of methods for teaching certain aspects of home economics, was among the topics she used in normal institute projects. Her *A Treatise on Domestic Economy* had been adopted as a textbook for use in schools and had been admitted by the Massachusetts Board of Education as a part of the Massachusetts State Library.

According to Isabel Bevier, when later leaders in home economics sought guidance for "a place and a way for teaching the problems of the home" at the college level, they found that Catharine Beecher had outlined a scholarly plan for such a procedure in the middle of the nineteenth century.

Catharine Beecher believed that the subject mat-

ter of home economics could be organized in six subdivisions. In present-day terminology, these are: family economics and home management; family relationships and child care; food and nutrition; health; housing, equipment, and home furnishings; and textiles, clothing, and related arts. The Committee on a Syllabus in Home Economics designated only food, shelter, clothing, and home and institutional management as the four subdivisions of home economics subject matter. Present-day home economists are more nearly in agreement with Catharine Beecher's comprehensive plan.

In view of these outstanding contributions, it is not surprising that Ellen Richards, an acknowledged leader in home economics, recognized that Catharine Beecher had been the outstanding advocate of the subject for more than two-thirds of the previous century. Mrs. Richards appreciated Catharine Beecher's well-founded theories, many of which were being proved by research. At the same time many have not been disproved either in Mrs. Richards' or in the present generation. Mrs. Richards rightfully ascribed the true beginning of home economics to Catharine Beecher, who was more than a pioneer in the movement for the education of women and more than a pioneer in home economics. She was the founder of home economics.

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Kwashiorkor

Kwashiorkor, the "new" disease given great attention by FAO and WHO since 1949, was first mentioned in medical literature in 1933 by the Jamaican pediatrician C. D. Williams, working in the African Gold Coast. She described it as a post-weaning condition invariably coincident with a history of improper feeding after weaning or, as she phrased it, "the disease of the displaced baby." Symptoms found at that time were: weight loss, edema, diarrhea, depigmentation of hair and skin, lesions of mucosae and mucocutaneous junctions, and "crazy pavement" dermatosis; and the disease was extremely difficult to cure. The word "kwashiorkor" was given to the children by the natives of Accra, in whose dialect it means "red boy," because of the resultant depigmentation.

Research and consequent theories developed between 1937 and 1950. In 1945, Gillman and Gillman in Johannesburg discovered liver damage to be an essential part of the kwashiorkor syndrome, and others found pathologic conditions in the kidney and bowel. Trowell stressed in 1949 the role of parasitic manifestation as well as dietary deficiency. Many theories are still unproved; the pancreas is now emphasized as the site of the essential lesion, but the theory of protein deficiency as the main causal factor is still open to disagreement.

Syndromes related to kwashiorkor have been found throughout the tropical world; geographical variations include the greater incidence of red and grossly depigmented hair in Africa than elsewhere; and the dermatosis Williams found is actually rather rare. However, weight loss, edema, anemia, and liver damage seem to be ubiquitous, with the only geographical difference being a slight change in emphasis on certain symptoms from place to place.

The most recent definition of the disease, by Brock and Autret in 1951, is given as: "a nutrition syndrome or syndromes among indigenous Africans in which characteristically there occurs. . .retarded growth in the late breast-feeding, weaning and post-weaning phase, with. . .alterations in skin pigmentation. . .edema. . .fat infiltration, cellular necrosis, or fibrosis of the liver. . .a heavy mortality apart from proper dietary treatment, and. . .the frequent association of a variety of dermatoses. Some combination of the above features appears to be fundamental."

However, the following problem is presented: if the word "kwashiorkor" is to be used in this sense only, then it is necessary to find a generic term to cover similar diseases in other parts of the world.—*Abstracted from: Waterlow, J. C.: What is kwashiorkor? West Ind. Med. J. 1: 15, 1951.*

Our Role in Civil Defense[1]

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CIVIL defense is the answer to attack on our home front—defense *by civilians* acting under *civil* authority. It is a common error to reason that our military forces could and should assume responsibility for civil defense. A statement dated September 4, 1951, by General Omar Bradley, which was read before a special United States Senate subcommittee, reads in part:

"While the Joint Chiefs of Staff feel that civil defense itself is not a military, but rather a civil responsibility, the Armed Forces have in the past supported, and will continue to support, the very important mission of civil defense. If war should come, the entire military effort will be concentrated upon the primary mission of defeating the hostile armed forces." General Bradley's statement closed with, "If civil defense does not function effectively, our defense efforts will be very adversely affected."

Enemy attacks on this country could easily result in tens or hundreds of thousands of casualties in individual target areas, and millions in the entire nation. If we are to save lives under such conditions, we must establish a highly efficient wartime disaster organization. It must be established now, and there must be frequent practice until it is effective.

TYPES OF FEEDING PROBLEMS

Following a wartime disaster several categories of feeding problems would arise:

(a) Feeding large numbers of people who were made homeless or for other reasons were unable to obtain and prepare their own food. Such mass feeding would need to be provided both within the disaster area and in emergency centers outside the area, to which people could be evacuated.

(b) Feeding large numbers of workers from the local civil defense organization and from nearby and distant agencies.

(c) Feeding large numbers of hospitalized casualties. It is estimated that it would be necessary to care for 95 per cent of the injured and sick in an attacked area in improvised hospitals established in schools and other suitable buildings, in the area itself and in nearby localities. All existing hospital resources of local, nearby, and even distant communities would be called upon and expanded to two or three times normal bed capacity.

(d) Maintenance of existing feeding facilities and accommodations essential to the war effort.

Several complicating factors must also be remembered in planning to meet the needs of these four categories. First, the heavy demands on transportation facilities must be kept in mind. Transportation of casualties by ambulance, of incoming civil defense workers and outgoing evacuees, and of incoming medical and surgical supplies are but a few of the things that would throw an extreme burden on transportation equipment. Furthermore, all of these carriers would be impeded by debris and rubble, damaged bridges, and similar obstacles. Provision of food, therefore, would not be a mere matter of locating adequate stores; the problem of shipping would also need to be solved.

Other difficulties would plague civil defense workers. Water supplies, electricity for refrigeration, gas for cooking, and other related utilities might be cut off at a time when much dependence would need to be placed on unskilled personnel, and when unusual contamination of food by radioactive substances or toxic biologic or chemical products might occur.

Let us now examine some of the special dietetic problems which would arise. Although the provision of food supplies for an attacked population is not the dietitian's responsibility, many aspects of the proper and effective utilization of food are within her province.

NUTRITIONAL PROBLEMS

What are the dangers of deficiency diseases arising? It is not believed that any significant number of cases of malnutrition, deficiency diseases, or related conditions would be encountered, because the period of reduced, unbalanced, or otherwise abnormal diet would be comparatively short—a few days to a few weeks. The greatest problem would be to furnish any kind of palatable calories that could be

[1] Presented at the 34th Annual Meeting of The American Dietetic Association in Cleveland, on October 9, 1951.

shipped in and prepared with available cooking and related facilities. Deficiencies should not develop if food distribution were equitable and if the calories in the rations came principally from unrefined or fortified foods.

In general, then, postdisaster feeding plans should be based on availability of food with emphasis on caloric values and ease of preparation. Feeding plans should be based on supplying an average of 2000 to 2200 calories per person per day for the general population. This does not include losses from preparation and cooking. Active civil defense workers and people performing heavy labor in industry would need at least 3500 calories per day.

MEETING NEEDS OF SPECIAL GROUPS

Infants and young children would present special feeding problems because of the sharply limited variety of foods that they could eat safely. The greatest problem in this group would be the provision of adequate water and milk. Infants must have top priority on milk supplies. The estimated daily requirements for infants under two years of age in a population of 100,000, immediately following a disaster, are in round numbers, 1300 gal. water, 5000 cans evaporated milk, and 300 lb. each of cane sugar, soda or Graham crackers, and wheat or rolled oats cereal. To these, several meats or meat soups and sieved vegetables or fruits would need to be added after the first week. Evaporated milk should be fortified with vitamin D. Dried milk might also be used. Needs for ascorbic acid could be disregarded during an emergency of less than a month.

Milk would be rationed in the following order of priority: infants under one year of age, children one to two years, sick children two through nine years, women in the last half of pregnancy, well children two through nine years, sick persons ten years or over, and well children over ten years.

Food for patients in existing and improvised hospitals would be selected principally from the general supplies for the population. Special diets could not be provided immediately following a disaster for persons suffering from diseases usually managed by diet therapy, such as diabetes and peptic ulcer. Management of such disorders would, therefore, need to be based temporarily on the use of insulin in the case of diabetes and of the appropriate medicinal preparations for other conditions.

Let us proceed to consider some of the special problems raised by the direct effects of the actual weapons.

LACK OF UTILITIES

First, as a direct result of bombing, the water supply of the entire city might be completely disrupted, considerably decreased, or cut off only in certain areas. Moreover, uninterrupted supplies would be subject to contamination, and most large emergency raw water sources would be grossly contaminated. The consequent dangers are apparent. Not only would drinking such water be hazardous, but water for cleansing and many other essential purposes would be in short supply or, if available, often only would substitute a new hazard.

Second, the destruction or temporary crippling of other public utilities might occur. The dangers usually inherent in improvised mass feeding by unskilled food handlers would be multiplied by the lack of adequate cooking facilities and of safe dish- and utensil-washing facilities, as well as the loss of refrigeration. Interruption of electrical power would introduce hazards which would be difficult to evaluate. There would be inadequate refrigeration for wholesale, retail, and home stores of foods and for leftovers in improvised kitchens.

CONTAMINATION OF FOOD

Radiologic contamination of food is another factor to be considered, but fortunately it does not present as complex or disturbing a problem as is commonly thought. The radiologic hazard following a high airburst of an atomic bomb would be negligible. Following a subsurface burst, particularly an underwater one, a considerable amount of radioactive contamination might occur.

In any of these types of atomic attack, the following precautions would be sufficient. Any food in undamaged, unopened tin or glass containers or in closed refrigerators could be eaten immediately. The outside of containers should be rinsed and wiped with a damp towel before opening.

Open food should not be condemned, but after subsurface bursts with known radioactive contamination of the area, such food should not be eaten until careful radiochemical analysis has established its safety.

Widespread contamination of food could result from enemy use of aerosol clouds of biologic warfare agents over a city. Localized attacks on a small group of individuals, through contamination of their food from a common kitchen, might also be employed. It is unlikely that biologic warfare against animals or crops would cause illness among human consumers of the food from them. However, the cause of catastrophe threatened by this type of warfare would be loss of food and of other animal and plant products. Thorough cooking would destroy most biologic agents introduced by any means into food.

Nerve gas could also contaminate food to a lethal extent. This is particularly true of meats and other fatty foods, because of the affinity of fats for nerve gases. No food suspected of contamination with lethal war gases should be consumed until established as safe by competent examination.

We have briefly reviewed some of the major civil defense problems relating to food needs. Let us now

attempt to coordinate them with the dietitian's role in this program.

CIVIL DEFENSE ORGANIZATION

Nationwide civil defense responsibility is divided into three major jurisdictions: federal, state, and local. The Federal Civil Defense Administration consists of the national headquarters in Washington and nine regional offices. Actual planning work is carried out by the headquarters staff with advice and assistance from the regional officers. Plans for emergency feeding programs are the responsibility of the Emergency Welfare Services Division. Nutritional standards, emergency sanitation measures, and the organization and training of professional and technical personnel for these functions are the responsibility of the Health and Special Weapons Defense Division. Many other groups are involved, however, such as the Transportation, Communications, Engineering, and Supply Divisions. Committees of both governmental and nongovernmental experts, frequently organized on an *ad hoc* basis, are used to advise these various divisions in many technical aspects of their work.

The federal program is based on a federal-state relationship. Federal matching funds are allocated only to states. Our communications with local agencies respecting policy matters are made through the states. The state agency is responsible for coordinating local civil defense programs within the state and for arranging interstate agreements for mutual support. The regional offices of the Federal Civil Defense Administration also assist states in these agreements. The state agencies need advisory groups to interpret federal recommendations in terms of the needs peculiar to the individual states.

Some of you may thus occasionally be called upon to sacrifice both time and effort to serve on either federal or state advisory committees. Such participation is an important phase of protection of our national security, and I hope you will regard it as a privilege and give your services unselfishly and enthusiastically.

However, the real substance of the national civil defense program consists in the local official agencies, supported by individual citizens voluntarily cooperating with their local officials to build a strong defense program. I must impress on you that *civil* defense leaves no room for *independent* action. We face one of the most stupendous tasks in history. The only way our efforts can be successful is through selfless cooperation that, in American democratic fashion, will build a gigantic, integrated team devoted to a common cause: preservation of our nation, our democracy, our way of life.

The work of every one of you will be required to attain this objective. It is estimated that about 15 million people will be needed as civil defense workers, about one out of every ten. But certain groups, because of their training and experience, must contribute far more heavily. In the case of dietitians, for example, I am certain that all of those remaining in civilian life will be needed, and even then it will be necessary to train many auxiliaries. Similar needs exist for physicians, nurses, dentists, sanitary engineers, sanitarians, and many other professional and technical groups.

DIETITIANS' ROLE

What are some of the major tasks you must undertake to fill your role in civil defense?

You must know the approximate number of people who might need to be fed under mass care conditions, including not only a percentage of the total population of the target area, but also large numbers of civil defense workers. There is also a special problem of bringing feeding facilities to the disabled in hospitals. It is not your task to devise these figures; instead, it is your work to interpret them realistically in terms of needs for dietetic services. If you have been told to prepare dietetic services for a total of 100,000 people and following the disaster fortunately must provide for only 10,000, you are well prepared. But the reverse is not true; an organization based on services for only 10,000 would be overwhelmed when faced with a problem ten times as great.

The numbers of people for whom your services would be necessary demand that auxiliary workers be trained. A good home cook, for example, is not necessarily prepared to translate her culinary abilities for a family of four to cooking under adverse conditions in a unit serving several hundred people, nor is she aware of the special precautions necessary to prevent outbreaks of food poisoning under such mass feeding conditions. Many auxiliary cooks and other food handlers, and sanitation inspectors, must be recruited and trained.

Quantity menus and recipes must be prepared and distributed. The federal agency will make general recommendations, but these must be adapted to fit anticipated local needs and particular resources that will vary widely in different communities.

Plans must be made to avoid waste and spoilage. American garbage cans are noted for the wasted calories they contain. Following a disaster, such calories might not be merely wasted but could represent actual deprivation of essential nourishment for many people.

Menus should avoid, to the greatest possible extent, the use of highly perishable foods or methods of preparation that increase the chance of spoilage. Under disaster conditions, even with the best-laid plans, the risk of spoilage will be great. Inadequate refrigeration and dishwashing facilities are among the most important factors in this hazard.

Special menus based on expanded potential capacities of existing hospitals and on projected capacities of improvised hospitals should be made. However,

it must be taken into consideration that as a rule these foods will come from the community supply.

Although civil defense plans should provide for emergency cooking equipment, shortages and delays in availability of such facilities should be anticipated. Outdoor cooking of a rather primitive nature might become necessary, at least temporarily, and dietitians should be prepared to function under such conditions. You must be familiar with the detailed plans for setting up feeding facilities. An example of this would be knowledge of every building marked for improvised hospital use and thorough familiarity with all facilities of such buildings.

PUBLIC HEALTH SAFEGUARDS

You must be familiar with all plans for emergency milk supplies and the priorities for their distribution, as many of the pasteurization and bottling plants for processing raw milk are within the target area and could easily be lost. Under no circumstances should raw milk be used. Enemy attack itself will produce a huge number of casualties, and we dare not risk increasing this number by removing our public health safeguards.

We have noted the potential shortage of water, especially safe water. Boiling questionable water is the safest procedure, but it is time-consuming, especially if gas or electricity for heating is diminished or absent. First priority for such boiled water would have to be made for drinking and for surgical purposes. Insufficient and questionable supplies for other purposes—dishwashing, for example—might have to be compensated for by the use of detergents and by heavy chlorination and other chemical treatment. Water for food handlers' personal lavatory purposes is another example.

Under such conditions certain serious nuisances would arise, which, although their abatement is not the dietitian's job, would increase the difficulty of carrying on dietetic functions. For example, there would be no garbage collection. This would add to an already increased problem of combating rodents, vermin, and other pests—not only a nuisance, but a great food sanitation hazard.

These are some problems which must be recognized, studied, and solved in cooperation with your local civil defense officials. I can promise you that your federal agency will help in every possible way with recommendations and information, but, in the last analysis, the detailed problems and needs of no two cities will be identical. No matter how much assistance is received from the federal and state agencies, much local work and ingenuity will be required to develop a good local organization.

DIETITIANS AS CITIZENS

I want to stress that your role in civil defense is first of all that of discharging your obligations as citizens. Your specialized competence happens to make you especially useful and to demand the services of all of you, instead of only some. An enemy bombardier cares nothing for your normal affiliations, for city or state or other political boundaries. His assignment is to attack a certain target in the United States. Your job is to participate in either military or civil defense against him, acting as American citizens and not as people interested only in one organization, city, or state.

The fact that you may live and work in a nontarget area is not relevant. Your services may be temporarily needed in a nearby target city, in an adjoining state, or a thousand miles away. Pittsburgh steel and Akron rubber are essential to our war effort. If either of these cities is crippled, their loss is just as serious whether you are a resident of Pittsburgh, Akron, or a village in the Midwest's wheat fields. If you are not a resident of a target area, your responsibility actually may be greater because, not having been harmed or oppressed with grief or anxiety over the death or critical condition of loved ones, you are better able physically and mentally to participate efficiently in a mission of relief and mercy.

Does this mean that I am proposing that, at any time enemy attack might necessitate it, you should be prepared and willing to leave your usual work and your home, and rush to a place, either near or distant, where you are needed, no matter at what personal sacrifice and risk? *Of course it does!* No matter when, where, or how an enemy might strike our civilian population, his purpose would be to defeat us, to crush our liberty, to subjugate our cherished way of life to his. The things he would take from us are ours: yours, mine, all Americans'!

Civil defense has been called "the fourth arm of national defense." Unlike the other three arms—the Army, Navy, and Air Force—it is organized on and consists of local units. But like the other three arms, these units have nation-wide responsibility to serve whenever and wherever needed if war comes. Like the armed forces, the members of the Civil Defense Corps must be highly organized and must know exactly where to report for duty immediately following a disaster, what to do, and when to do it. They must practice frequently until all weak points have been discovered and remedied, and until maximum possible efficiency and coordination of post-disaster operations are assured. And such organization plans and drills must be continued and revised as indicated, as long as there is any threat of war in the world.

In 43 A.D., according to *Institutions Magazine*, mastodon steak, selling at $8 a pound, was eaten by the Emperor Claudius. The cuts came from monsters which had been frozen for centuries in Siberian icebergs.

Current Comment

CLINICAL INSTRUCTION IN DIET THERAPY IN THE SMALL HOSPITAL[1]

SISTER JOHN BAPTIST

Head Dietitian, Trinity Hospital, Jamestown, North Dakota

Clinical instruction is that part of the student nurse's course which is conducted on the wards or service where the student is sent for specific clinical experience. It does not take the place of more formal classroom instruction, but helps to supplement and clarify many of the ideas that have been presented in foods and nutrition and diet therapy. Much theoretical instruction may be lost unless the application is made on the service and classroom instruction correlated with practical experience.

Sometimes the excuse is given that students are too busy during their duty hours to have ward classes. If we examine their work, we often find that they are assigned work devoid of educational value. Traditionally they have been given duties not justified on educational grounds. Some of these could be done just as well or better by maids, thus leaving the students sufficient time for ward classes.

The aims or objectives of such clinical ward experience in diet therapy would be to develop in the student:

(a) An appreciation of the value of the dietary treatment and its relation to other phases of therapeutic management.

(b) Initiative, resourcefulness, and judgment in adapting the general diet to the needs of the individual patient on a therapeutic diet.

(c) Recognition of the need for instruction of patients in dietary as well as health principles and of the need to seek an opportunity to give such instruction.

(d) An appreciation of the effects of social, economic, and racial factors on the patient's ability to carry out the diet at home.

(e) Understanding of the patient as a person.

(f) An appreciation of the adequate diet in the development of practical health standards which will function for the student personally.

EDUCATIONAL FACILITIES AND TEACHING AIDS

The educational facilities and teaching aids will necessarily vary in different institutions, but there are certain minimum standards that we should try to attain, even in a small hospital. It is ideal to have a unit completely equipped for instruction, but this is not necessary. We should try to have a certain amount of privacy and be as free from interruptions as possible. Usually some room can be found which will answer the purpose.

There should be a ward library with sufficient good references for the planning and understanding of therapeutic diets. Access to nursing and dietetic publications and at least one medical journal can usually be had in the nurses' library. The writer has found it valuable to keep a card file of current professional reading with topic headings under different diseases. Thus the student nurse may more readily look up material for case reports. It takes a great deal of encouragement to induce students to use journal references rather than textbook citations.

There should be a sufficient number and variety of therapeutic diets available for practice; if there are not, this experience may be given in another way. The students can be assigned the calculation of these diets a few times to become familiar with them, and they can be discussed at ward classes.

Amy Frances Brown states in *Clinical Instruction* (1) that the teaching of student nurses should be entrusted only to a well qualified dietitian who has either high school or college teaching experience and sufficient dietetic experience to enable her to give meaningful supervision. We know that there are few dietitians available to small hospitals who have this background. Such a dietitian can compensate in great measure through professional reading to widen her scope of understanding. One of my teachers in methods made the statement that one would never be a good teacher until one was full of her subject to such an extent that she just wanted to give it to others. It is unfortunate that the dietetic curriculum is so full that a student may include only one or two education courses.

The young dietitian should attend the medical, surgical, and pediatric lectures so that she may better correlate these classes with her teaching in diet therapy. If she observes one course a quarter during her first year, it will not take too much of her time.

The dietitian should have the opportunity for daily contact with the patients she serves so that she may make meaningful to the student the practical application of diet therapy to the patients' total care.

[1] Presented at the annual meeting of the North Dakota Dietetic Association in Jamestown, on May 12, 1951.

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PLAN OF INSTRUCTION

Prior to the diet therapy practice, the nurse has, of course, completed her foods and nutrition classes. The dietary experience may be concurrent with diet therapy or as soon thereafter as possible. It seems to work out much better in practice to have the student have part of her formal classwork before coming to the diet kitchen. Otherwise, she is required to work with a good many diets for which she has no background.

It is the usual procedure to integrate diet therapy with the courses in medical and surgical nursing. This sometimes works out better on paper than it does in actual practice, but they should be correlated as closely as possible.

UNDERSTANDING THE STUDENT

The student should be oriented to the diet kitchen either before she comes or during the first day. This is a good time to explain policies, routine schedules, rotation of duties, records, and the understanding of the whole patient.

The instructor should study to understand the difficulties that face each of her students. Each has different intellectual abilities and problems, and no two students have a common background. Some have natural ability to cook and have done much of it, while others are afraid to light a burner. We must try to see their problems and give them individual help as needed. The student as well as the patient is a personality.

ACTIVITIES DURING DIETARY EXPERIENCE

The activities of the student during her dietary experience may need to vary somewhat in different situations. The foods and nutrition course will provide her background in food preparation. Other than re-emphasizing the proper preparation of vegetables and meats, it is probably better for her to become familiar with the preparation of special foods, such as non-allergic and bland foods and high-protein mixtures.

To help the student correlate the principles learned in classroom instruction with her practical experience, she should plan and serve under supervision as many types of therapeutic diets as possible. If all types are not being served, the students may be required to plan, prepare, and eat a different type of therapeutic diet each day at their meals so that they have first-hand information on the effect of such cooking on the taste buds!

The student should visit the patient (a) to ascertain the acceptability of the diet, (b) to make adjustments whenever necessary, (c) to gain a greater understanding of the patient as a person with individual problems, and (d) to teach him about his diet and about good nutrition. It is ideal for her to visit the patient just after a meal is served so that she may see him while he is eating. She should study the patient's chart, especially the laboratory findings, medications ordered, and progress made. Thus it will be easier for her to observe changes, if any, effected by diet and to determine insofar as possible what the actual food intake has been.

The nurse should observe instruction of the patient and be able to do some of it herself. I believe that more knowledge is assimilated if two or three student nurses are taken to the bedside when a diabetic patient is being taught about insulin reactions, care of the feet, and dietary management than if the same material is presented in a class-

Form for record of conferences on dietary problems, adapted from that presented in Clinical Instruction *by Amy Frances Brown (1), page 282. The original form was devised by Ruth Eloise Sperry, Harris College of Nursing, Texas Christian University, Fort Worth.*

PATIENT'S NAME AND AGE	MEDICATIONS	DIET ORDERS	LABORATORY FINDINGS	SOCIAL AND ECONOMIC PROBLEMS	DIETARY PROBLEMS ENCOUNTERED	EXPLANATION OF DIET	INSTRUCTIONS
SYMPTOMS AND DIAGNOSIS							

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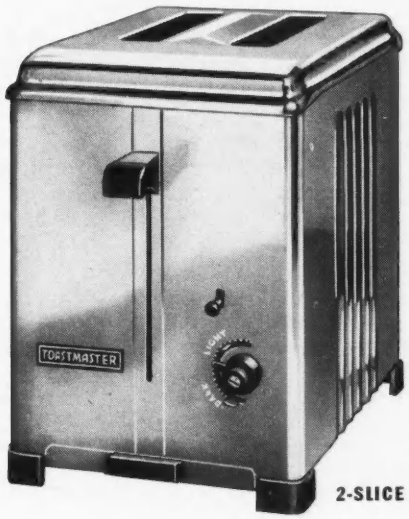

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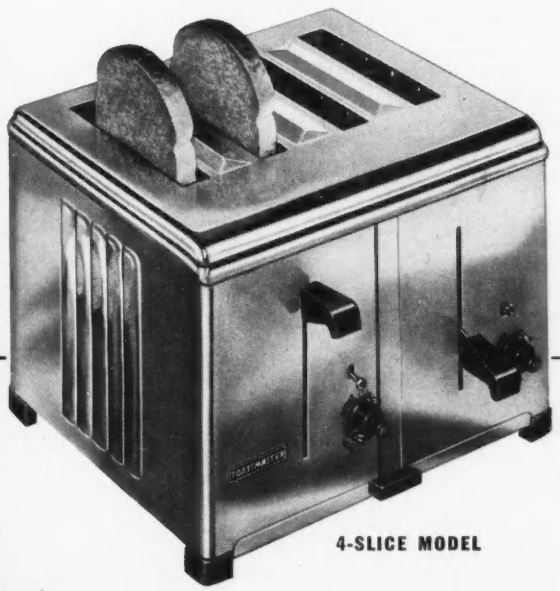

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room. The material then is less theoretical and becomes more vital to the students when they hear the patient's responses.

ORGANIZED WARD CLASSES IN DIET THERAPY

There are various methods of conducting organized ward classes for clinical teaching, such as the lecture method, panel discussion, and assigned oral reports. The discussion group which centers around an individual patient who requires a particular therapeutic diet is an excellent method. I have found the use of the record form illustrated a valuable aid. Each student is required to fill out four of these forms for patients on different types of diets and discuss them at ward classes. In preparing for this, the student must study the patient's record and visit with him in order to bring to the conference an interpretive report of the diagnosis, indications for special diets, significant laboratory findings, medications important in this disease, social and economic problems with a possible solution, dietary instructions given, and a progress report of the patient's hospital stay. In some cases it is wise to have the student see the actual X-rays or to watch a gastrointestinal fluoroscopy. She should be able to discuss the characteristics and uses of the diet and reasons for changes made from time to time. All of this should be correlated with the laboratory findings and the patient's understanding and acceptance of the diet.

The dietitian must be sure that the student understands fully the place of the diet in the total care of the patient. It is interesting sometimes to have the student figure the cost to the patient when expensive medication must be taken over a long period. Examples would be the expense of protein hydrolysates as compared to dietary protein or of vitamin supplements.

EVALUATION OF CLINICAL TEACHING

The purpose of evaluation of clinical teaching is to determine as nearly as possible its worth and effectiveness in terms of its stated aims and objectives. Although we may fall wide of the mark, periodic evaluations should show some progress toward their fulfillment. Questions we might ask ourselves are: (a) Does it aid in the understanding of the patient as a whole? (b) Does the student meet each new experience with the use of the knowledge acquired? Does she show growth of insight? (c) Is she able to put herself in the patient's place? (d) Does the student herself eat a nutritious diet?

These are suggestions that have proved of value and are an outgrowth of teaching experience. Any dietitian who works conscientiously towards the fulfillment of these aims will undoubtedly have reason to be gratified with the results of her efforts.

OUR GOAL

In a small hospital where there is usually just one dietitian, the administrative duties require so much of her time that it is difficult to find time for clinical teaching. Dietitians are often not interested in teaching or trained for such work. We could probably make an application to ourselves from a story of an old Kansas farmer who had a cow for sale. When a prospective buyer went to see the owner, he asked about the cow's pedigree. The old farmer didn't know what pedigree meant, so then he was asked what the cow's butterfat production was. He didn't have any idea. Finally the buyer asked him whether he knew how many pounds of milk the cow produced each year. The farmer shook his head and said, "I don't know. But she's an honest old cow, and she'll give you all the milk she has."

That may be a goal of honesty for us—to give all we have. It is our duty to give students all we can possibly give. If we accept students in our hospitals, we must give them as good training as possible and develop their understanding and judgment. Students have difficulty interpreting and evaluating data, so we must help them develop along this line.

REFERENCE

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Ion-Exchange Treatment Improves Milk Storage

According to the *Report of the Chief of the Bureau of Dairy Industry, Agricultural Research Administration, 1951,* research by the Bureau indicates that the ion-exchange principle used in treating hard water may also have advantages in preparing milk for frozen storage and for drying by the drum process. Ion-exchanged milk will also improve ice cream, inhibiting sandiness when present as a relatively small proportion of the total milk solids in a high-solids ice cream mix.

Bureau scientists found that when only 10 to 15 per cent of the calcium was replaced by sodium, there was no improvement in keeping quality of the frozen milk, but when 50 per cent was replaced in samples stored at 0°F., the development of oxidized flavor was deferred for at least five months. Oxidized flavor developed within one month in normal milk stored under the same conditions.

Body stability of the treated milk remained good for five months, but protein and fat separation appeared in the normal milk after one to two months' storage. All samples would have kept in good condition much longer if the storage temperature had been lower.

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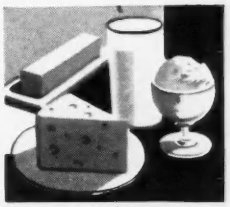
Modern research is constantly adding to our knowledge of milk and its products . . . just another example is the addition of the recently isolated and identified vitamin B_{12} to the list of *more than 100 different nutrients*[1] now known to be present in milk. Laboratory analyses show milk to contain an average of four micrograms of this vitamin per liter.[2]

The functions as well as the nature of the nutrients of milk are revealed by research. In the laboratory, scientists have solved a puzzling nutritional "mystery"—why milk is helpful in the dietary treatment of niacin deficiencies. It is because tryptophane, an amino acid present in milk, can form niacin in the body.[3]

Many such instances of interrelationships between nutrients emphasize the importance of milk as a "nutritional whole." Two examples worthy of note are the physiologically desirable ratio between calcium, phosphorus, and magnesium in milk,[4] and the favorable effect of lactose on the absorption of calcium,[5] and possibly of other minerals.

The beneficial effects of dairy foods—milk, butter, cheese, ice cream—on our national health are constantly demonstrated by research.



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Book Reviews

Good Food without Salt. By Margaret Vaughn. New York: Thomas Y. Crowell Company, 1951. Cloth. Pp. 108. Price $3.

This book was prepared by the author for the housewife who is called upon to make palatable a regimen of unsalted food day after day. A member of this author's own family who considered himself an amateur gourmet was told to follow a salt-restricted diet for an indefinite period of time. This author uses herbs, spices, wines, and vinegar with ingenuity to make dishes that one might enjoy, hence she was encouraged to share her recipes with others.

The book makes available recipes for soups, meats, vegetables, breads, salads, and desserts.

The recipes were laboratory-tested for sodium content, which is given, as well as the caloric value, for each serving.

The appendix includes a table showing when to use spices, herbs, and seeds to season different foods. Some of the recipes may seem complicated and the resultant food unfamiliar to some patients, but most of them represent simple and palatable preparations.—*Louise Irwin, Assistant Professor of Dietetics, Indiana University Medical Center, Indianapolis.*

Employee Feeding. A Manual of Policies and Operating Procedures. By John W. Stokes. Boston: Edmund S. Whitten, Inc., 1951. Paper. Pp. 92. Price $3.

This manual is based on the author's experiences in food service management, participation in surveys and studies of employee food services, and practical experience in the industrial engineering field. It is intended to provide a guide for executives of companies and institutions maintaining a food service for employees, and to aid the manager or supervisor in basic operating practices.

It is disappointing to find the author relegating the dietitian to menu-making only or the supervision of a "small operation" when many qualified dietitians are known to be managing successfully large industrial, hotel, hospital, store, college, and other institutional food services. Unfortunate, too, is the misspelling of "dietitian" throughout the manual.

The fact that in many industrial cafeterias labor cost is the largest single expense is given proper emphasis. It is pointed out that sufficient time should be given to advance planning of layout and equipment, e.g., "actually, it can be demonstrated that it costs at least 1¢ for an employee to walk 158 feet in an industrial cafeteria." Good examples of techniques for checking operating efficiency are also given. These include material flow plans, job analysis sheets, work simplification process charts, work flow layouts, and labor analysis charts.

Many helpful suggestions in controlling food cost are presented, such as standard portions, unit costs, portion cost cards, daily food cost percentages or daily purchase records, and preventing waste through controlling leftovers, pilferage, and mistakes in handling cash.

The sample menus for a week do not seem well chosen to illustrate good meal planning. The number of employees necessary to feed 4500 luncheon patrons a day, as shown on the organization chart, seems high for the average industrial cafeteria.

The importance of maintaining the health of the employee through sound sanitation practices is pointed out.

Throughout the manual, the author emphasizes the importance of developing teamwork and suggests group meetings of the staff and occasional meetings with groups of employees to discuss problems and ask for suggestions. Such meetings can develop sound worker attitudes toward: sanitation, cooperation in controlling food cost, and increased productivity which will lower labor costs.

Other subjects covered include purchasing, receiving, storage, food preparation, care of equipment, and preventive maintenance. This manual is well written and provides much valuable information. The use of very small type detracts somewhat from the otherwise easily read material.—*Wintress Dalbey Murray, Nutrition Director, Eastman Kodak Company, Rochester, New York.*

The Viennese Cookbook. By Irma Rhode. New York: A. A. Wyn, Inc., 1951. Pp. 260. Cloth. Price $3.

The Viennese Cookbook will be a source of delight to gourmets, of challenge to good cooks, and of despair to overweights. Its torten and pastries, sweet aspics and Viennese soups, pancakes and noodle dishes will please those who love good food. More chapters tell of coffee, desserts, drinks, hors d'oeuvres, breads, salads, fish, meats, poultry, and vegetables.

Chacun à son goût—each one to his taste—became the watchword of Viennese restaurateurs at the time it was the gay refrain of "Fledermaus." The chefs of this worldly city drew from the Hungarian, French, German, Russian, Balkan, and Polish peoples the ideas which resulted in fabulous foods that accompanied Vienna's "wine, women, and song."

Miss Rhode has carefully written her recipes, using proportions, ingredients, and terms familiar to American cooks. For the dietitian, here are menu ideas which will delight patients, staff, and customers. For the cook at home, there are recipes calculated to charm family and friends.—*Virginia Monahan Bayles, Department of Home Economics, University of Colorado, Boulder.*

RECENT BOOKS RECEIVED

Your Weight and Your Life. By Alfred L. George, M.D. New York: W. W. Norton & Company, 1951. Cloth. Pp. 272. Price $2.95.

The Party Sampler. By Edith M. Barber. New York: Sterling Publishing Company, Inc., 1951. Paper. Pp. 63. Price $1.50.

Cooking with Wholegrains. By Ellen and Vrest Orton. New York: Farrar, Straus and Young, Inc., 1951. Cloth. Pp. 64. Price $1.75.

Hospitals—Integrated Design. 2nd ed. By Isadore Rosenfield. New York: Reinhold Publishing Corporation, 1951. Cloth. Pp. 398. Price $15.

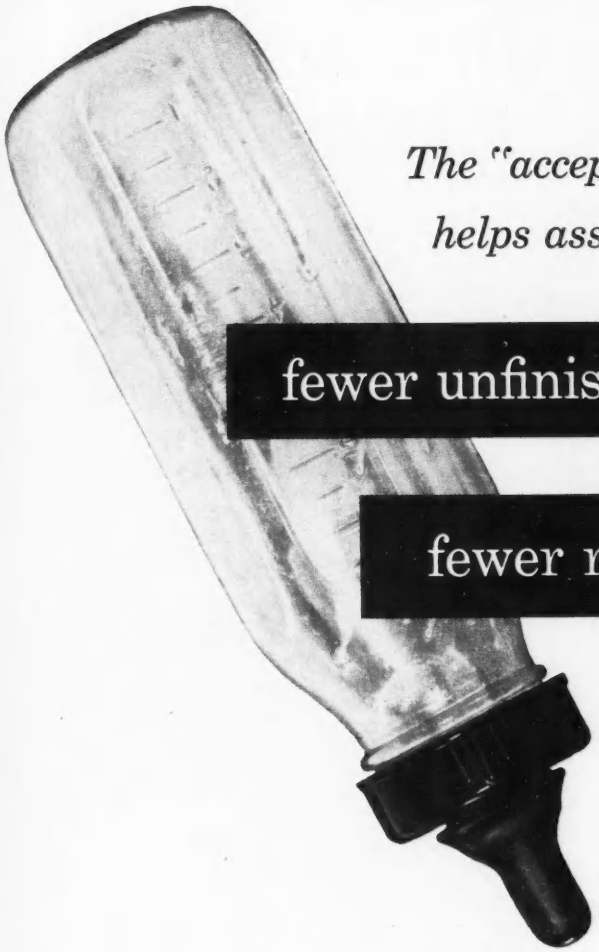
The Emily Post Cookbook. By Edwin M. Post, Jr. New York: Funk & Wagnalls Company, 1951. Cloth. Pp. 384. Price $5.

The Salad Book. By Louis P. DeGouy. New York: Greenberg, Publisher, 1950. Cloth. Pp. 302. Price $3.50.

Nutrition in Relation to Health and Disease. New York: Milbank Memorial Fund, 1950. Paper. Pp. 250. Price $1.

Nutrition and Climatic Stress. By H. H. Mitchell and Marjorie Edman. Springfield, Ill.: Charles C Thomas, 1951. Cloth. Pp. 234. Price $6.75.

Cookbook for Fridays and Lent. By Irma Rhode. New York: David McKay Company, Inc., 1951. Cloth. Pp. 187. Price $3.



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1. Bruce, J. W., Hackett, L. J. and Bickel, J. E.: Feeding Premature Infants, J. Pediat. *35*:201 (Aug.) 1949.

A QUARTER CENTURY OF PROGRESS IN INFANT NUTRITION
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Current Literature

Contributed by Mildred Bonnell and administrative interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Mame Dentler, Northwestern University Medical School, Chicago; Pauline Kegereis, The Children's Mercy Hospital, Kansas City, Missouri; Berdena Rosenow, University of Kansas Medical Center, Kansas City, Kansas; and the Journal staff

THE AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 18, November, 1951

* Heredity and diabetes. E. M. Watson and M. Thompson.—p. 326.

Heredity and Diabetes. Although diabetes mellitus shows a marked familial tendency, the exact mode of inheritance of the disease, as yet, has not been demonstrated completely, chiefly because of the absence of full concordance between the diabetic genotype and phenotype. The percentage of cases with positive family histories of diabetes varies inversely with the age at onset of the disease. The age at onset is earlier in those cases with positive family histories of diabetes than in those without such family histories and is especially early in those with bilateral family histories. On the whole, the available evidence favors the hypothesis that diabetes is inherited as a recessive characteristic. The age at onset of the disease is positively correlated in siblings but not, or only slightly, correlated in parent-offspring pairs. There is conflicting evidence as to whether diabetes is more likely to appear in the like-sexed than in the unlike-sexed siblings of diabetic propositi, but the present observations suggest that if any such relationship exists, it can be explained on the basis of preponderance of female diabetic persons.

AMERICAN JOURNAL OF ORTHOPSYCHIATRY

Vol. 21, April, 1951

* Adolescent alternation of anorexia and obesity. Workshop 1950. I. N. Berlin, M. J. Boatman, S. L. Sheimo, and S. A. Szurek.—p. 387.

Anorexia and Obesity. This is a case history of a twelve-year-old girl who weighed 98 lb., then abstained from eating until she weighed only 53 lb. Psychotherapy for the girl and both of her parents revealed that she was unwanted and was reacting to stress in the family by her refusal to eat. After several months of therapy, she began eating and gaining weight. The cachexia may symbolize the destructive death wishes of the child acted out on the self as punishing the parents with threats of death through starvation.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 41, November, 1951

Part I

* Public health aspects of water fluoridation. H. E. Hilleboe and D. B. Ast.—p. 1370.

Part II

* Coordinating maternity care: the role of nutrition. M. E. Lowenberg.—p. 13.

Water Fluoridation. Water fluoridation represents a significant advance in public health practice. By a relatively simple procedure of controlling the fluorine concentration of potable water at the optimal concentration, it may be possible to reduce dental caries by 60 to 65 per cent and, together with current dental practice, reduce tooth mortality from caries almost to the vanishing point. This new technique can be accomplished at the relatively low per capita cost of 5 to 15 cents per year.

Nutrition and Maternity Care. The program of maternal care in Rochester, Minnesota, is described. It is carried out by the nutritionists and nurses in cooperation with the obstetrician. The plan of consultation with the patient is discussed, case histories are given, and the method by which the individual diets are evaluated is illustrated. A booklet, *Score Your Diet*, has been developed to assist the maternity patient to understand her own diet. The importance of stressing cooking methods in teaching adequate nutrition is emphasized.

THE BRITISH JOURNAL OF NUTRITION

Vol. 5, No. 1, 1951

Vitamin A-active substances. T. W. Goodwin.—p. 94.

Vitamin A and vision. R. A. Morton.—p. 100.

* Standardization and requirement of vitamin A. E. M. Hume.—p. 104.

* Vitamin A levels in health and disease. T. Moore and I. M. Sharman.—p. 119.

Pathology of vitamin A deficiency and its clinical significance. Z. A. Leitner.—p. 130.

Vol. 5, No. 2, 1951

* Dietary surveys: variation in the weekly intake of nutrients. J. Yudkin.—p. 177.

The evaluation of leanness-fatness in man: norms and interrelationships. J. Brozek and A. Keys.—p. 194.

The composition of human milk with special reference to the relation between phosphorus partition and phosphatase and to the partition of certain vitamins. R. Chanda, E. C. Owen, and B. Cramond.—p. 228.

Conversion factors for vegetable and animal foods for human consumption. K. L. Blaxter.—p. 250.

The clinical picture in children fed after weaning on a predominantly vegetable diet. L. Wills.—p. 265.

* The nutritional adequacy of a vegetable substitute for milk. R. F. A. Dean.—p. 269.

Standardization and Requirement of Vitamin A. The history of the standardization of vitamin A is reviewed. Carotene, the first international standard, was replaced by cod-liver oil, and later by a vitamin A acetate, which is the present Reference Preparation. The conversion factor for vitamin A is discussed. The human requirement for vitamin A is dealt with both in terms of vitamin A and beta-carotene.

Vitamin A in Health and Disease. This summary of vitamin A metabolism includes a discussion of: carotene absorption; storage and distribution; reserves in human diseases; levels in human blood; and urinary excretion.

Variation in Dietary Studies. Self-selected diets of six young women were studied for four consecutive weeks in an effort to point out some of the limitations in the methods of determining dietary intakes and to observe the week-to-week variations. It was noted that a person may have an intake of any of the dietary components which is apparently adequate in one week and inadequate in another. The conclusion was made that a dietary survey extending over a period of seven days cannot be considered to give a

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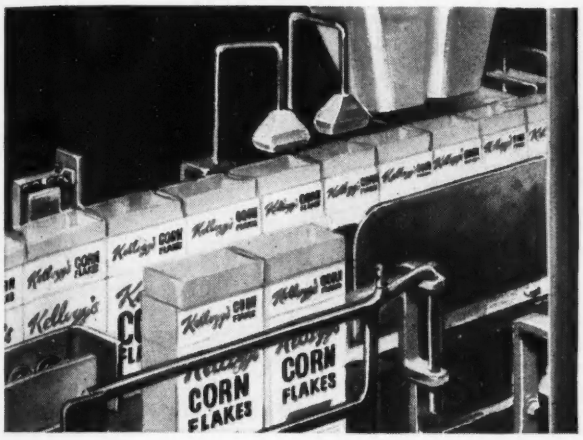

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sufficiently accurate assessment of the average intake of calories or nutrients by an individual.

Nutritional Adequacy of a Vegetable Substitute for Milk. This discussion deals with the replacement of the proteins of milk. Mixtures used by this investigator contained barley, wheat, and soya. The cereal-soya mixture was given to a group of children who received supplements of vitamins and calcium, along with semolina, vegetables (mostly potato), butter, and some bread. The children were also provided with vitamins A, D, and ascorbic acid, and calcium. Additional studies showed that sunflower-seed meal, soya, and maize protein were suitable plant proteins. According to this study, it seems justifiable to conclude that if the mixture of amino acids is suitably adjusted, a diet entirely of plant origin can give excellent results, at least for short periods, in the feeding of children. These findings should be helpful in working out additional means of feeding the world's millions of undernourished children.

CEREAL CHEMISTRY

Vol. 28, July, 1951

* The distribution of thiamine and riboflavin in rice grains; and of thiamine in parboiled rice. I. A. Simpson.—p. 259.

Vol. 28, September, 1951

* An evaluation of the methods used for determining the baking quality of nonfat dry milk solids. B. L. Larson, R. Jenness, W. F. Geddes, and S. T. Coulter.—p. 351.

Thiamine and Riboflavin in Rice. Using the photographic method, the distribution of thiamine and riboflavin in rice grains was studied. The results indicated that the maximum concentration of both thiamine and riboflavin occurred in the germ or embryo. Thiamine was largely concentrated in the scutellum and adjacent cells of the endosperm. Riboflavin appeared to be more uniformly distributed through the tissues of the embryo. The investigation of parboiled rice showed that under certain conditions, considerable diffusion of thiamine from the scutellum and pericarp tissues into the endosperm took place.

Baking Quality of Nonfat Dry Milk Solids. Several factors influence the baking quality of nonfat milk solids. These factors and their evaluation are of particular interest to bakers, since the addition of milk to bread is considered desirable nutritionally. Samples of skim milk were spray-dried, superheated and spray-dried, and roller-dried. It was found that all nonfat milk solids which were preheated at 145° and 155°F. were of poor baking quality—a higher temperature was needed. This study also indicated that all of the methods proposed for evaluating dry milk baking quality have limitations. Some promise is shown by the use of several of these tests together.

FOOD RESEARCH

Vol. 16, September–October, 1951

Effects of four cooking pressures on locally grown broccoli: cooking time, palatability, ascorbic acid, thiamine, and riboflavin. I. Trefethen, K. Causey, and F. Fenton.—p. 409.

* The microbiology of dehydrated vegetables. R. H. Vaughn.—p. 429.

Microbiology of Dehydrated Vegetables. Few dehydrated vegetables, it has been found, are microbially sterile. Low acidity and sugar content as contrasted with that of fruits account for the predominance of bacteria over molds, the latter being almost negligible. Microbial quality of the fresh produce and general level of sanitation during processing influence the microbial population of dehydrated vegetables. The article concludes by mentioning the possible use of microorganisms as indices for the quality of dehydrated vegetables and discussing this in relation to the need for attainable tolerances. Dehydrated foods, however, the author notes, are a largely unexplored field as yet, and additional information is constantly sought.

INDIAN JOURNAL OF MEDICAL RESEARCH

Vol. 38, October, 1950

* Dietary habits of depressed classes (Chairo and Dusadh) in Palamau. S. B. Lal.—p. 369.

Studies on Indian edible oils. Unsaponifiable matter. K. Ramamurti and B. N. Banerjee.—p. 377.

* Iron metabolism with typical Indian dietaries and assessment of its requirement for normal Indian adult. H. N. De.—p. 393.

* Observation on changes in dietary and physique of mining population in Jharia coal fields. S. B. Lal.—p. 401.

Dietary Habits. A dietary survey of fifty families of the depressed classes showed a low consumption of calories, small intake of milk, less than standard amounts of protective foods, and a complete absence of flesh foods, fruits, oils, fats, and condiments. The incidence of deficiency diseases in children was less than expected.

Iron Metabolism. Twenty-one experiments on iron metabolism have been conducted on six normal male adults with three typical Indian dietaries: the vegetarian rice diet, non-vegetarian rice-fish diet, and the non-vegetarian whole-wheat (atta) diet. The average intake and retention of iron on both rice diets were found to be 36.26 mg. and 8.06 mg., respectively; on the wheat diet, the values were found to be 44.01 mg. and 7.82 mg., respectively. Three balance experiments with low-mineral-content sago diets have shown that the minimum daily requirement of iron for a normal individual of India should lie in the region of 9 mg. The striking coincidence of the maximum constant retention value with the minimum daily requirement value has been interpreted as due to the failure of the body to retain more than that amount of iron which is required to satisfy the minimum requirement.

Comparison of Dietary Habits with Previous Study. Dietary habits and physique of the coal-field workers in the Jharia coal-mining area had been studied in 1939–1940. Since that time food shortages have become acute, and the cost of living index has risen 300 per cent. A comparison with the 1947–1948 survey showed that the people were consuming less milk, fruit, nuts, and other protective foods. The caloric intake had also dropped. The health of children was affected in that more deficiency diseases were prevalent, and the children were shorter in height.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 147, November 17, 1951

* Antifatigue diet. Editorials and Comments.—p. 1144.

Vol. 147, November 24, 1951

Parenteral alimentation with invert sugar. Editorials and Comments.—p. 1283.

* Subnutritional phagocytosis. Editorials and Comments.—p. 1284.

Diabetes mellitus. Queries and Minor Notes.—p. 1308.

Vol. 147, December 1, 1951

* Treatment of essential and malignant hypertension. I. H. Page.—p. 1311.

* Fluoridation of water supplies. Council on Pharmacy and Chemistry.—p. 1359.

Training table diets and swimming. Queries and Minor Notes.—p. 1398.

Vol. 147, December 8, 1951

* Critical evaluation of public health programs in nutrition. N. Jolliffe.—p. 1411.

* Cracks at corners of mouth. Queries and Minor Notes.—p. 1508.

Antifatigue Diet. Experiments on laboratory rats in the E. W. Thurston Laboratories of Los Angeles suggest that desiccated liver powder contains some unknown vitamin, hormone, or other nutritional factor. Under conditions of stress, this liver powder provides the necessary antifatigue factor not present in adequate amounts in routine laboratory diets.

Subnutritional Phagocytosis. Results of tests done on laboratory rats in the Veterans Administration Hospital,

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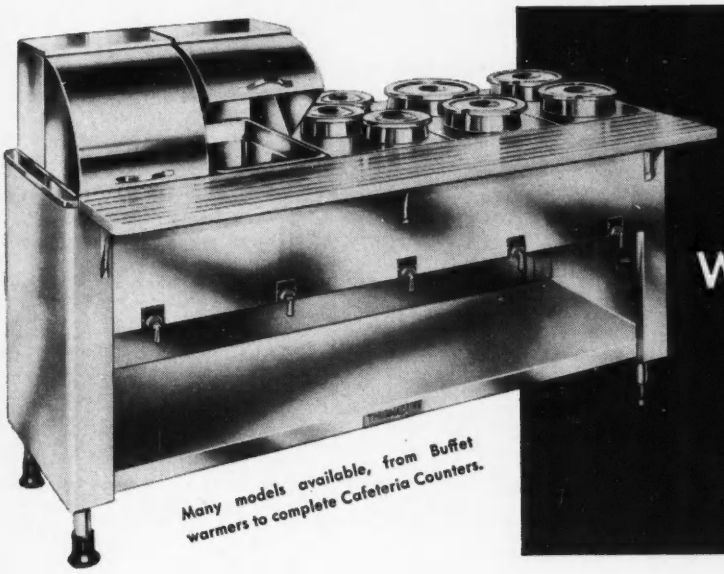

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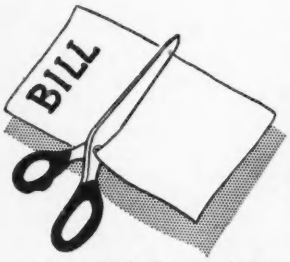

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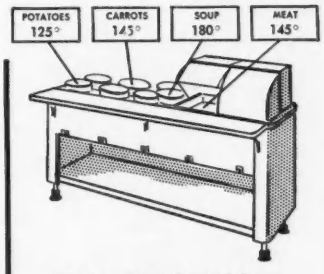

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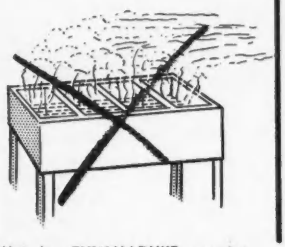

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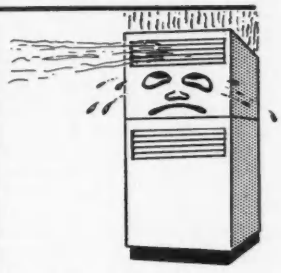

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Staten Island, are given. Starved rats showed twice the percentage of phagocytizing leukocytes as the well nourished rats. It is stated that clinical significance of these observations is not yet evident. Additional studies are needed.

Hypertension. The current treatment of hypertension is reviewed. Various diet therapies are discussed, with the admonition that it would be wise to wait until investigators have arrived at definite conclusions before using rather drastic dietary restrictions.

Fluoridation of Water. The Council on Pharmacy and Chemistry and the Council on Foods and Nutrition wish to go on record that it is their belief that the use of drinking water containing up to 1 p.p.m. fluoride is safe, but in case products are used which are naturally high in fluoride (such as bone meal, dentifrices, or fluoride chewing gum) the water should not be fluoridated.

Public Health Programs in Nutrition. Progress in the science of nutrition in helping to eradicate deficiency diseases is reviewed. The author pleads for more government support in public health educational programs and for research in the field of nutrition.

Cracks at Corners of Mouth. A physician asks, "Can well-fitting dentures cause cracks at the corners of the mouth?" The patient had been given much vitamin therapy and, therefore, nutritional deficiencies were not seriously considered. The answer was, "Well-fitting dentures will not produce cracks at the corners of the mouth. An inadequate diet will." However, there was the possibility that the dentures might be indirectly at fault, if they had prevented the patient from eating meat and other important foods.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 193, November, 1951

* Amino acid composition of fresh and cooked beef cuts. D. A. Greenwood, H. R. Kraybill, and B. S. Schweigert.—p. 23.

* Liberation and microbiological assay of vitamin B_{12} in animal tissues. H. E. Scheid and B. S. Schweigert.—p. 299.

Amino Acids in Beef. In this study the amounts of eighteen amino acids in fresh and cooked beef were determined. The amounts of the amino acids in the cuts of utility beef were higher than in the choice cuts of meat, owing to the higher percentage of protein and associated lower fat content in the utility cuts. The amino acids were found to be stable to cooking. Tables are included in the report, listing the data on the various cuts of beef.

Assay of Vitamin B_{12}. A series of experiments was conducted with the use of various media and techniques to develop a more uniform assay for determining the vitamin B_{12} potency of animal tissue. *Lactobacillus leichmannii 327* was used as the test organism. An amino acid medium that contained 2 mg. thioglycolic acid was found to be satisfactory, and the results obtained were comparable to those obtained when aseptic additions or Seitz filtration techniques were used. The vitamin B_{12} potency of several meat samples was determined. Liver was shown to contain approximately twenty-five times and kidney approximately ten to fifteen times as much vitamin B_{12} activity as pork, beef, or lamb muscle.

JOURNAL OF DAIRY RESEARCH

Vol. 18, October, 1951

* Reviews of the progress of dairy science. Section D. Nutritive value of milk and milk products. S. M. Kon and K. M. Henry.—p. 317.

Nutritive Value of Milk. Outstandingly clear, comprehensive, and up-to-date information on every phase of milk and its products is presented here. All known nutrients in milk are discussed, both in themselves and in their effect on the human body. Types of milk, including treated and fermented milks, are described, as well as milk products. Nutritional surveys conclude the article. Seven hundred twenty-eight bibliographical references are listed at the close of the article, first numerically and then alphabetically for added reader convenience.

JOURNAL OF HOME ECONOMICS

Vol. 43, December, 1951

* Location and counter areas for mechanical dishwashers. A. L. Wood.—p. 802.

Location of Mechanical Dishwashers. A time and motion study on the location of mechanical dishwashers, conducted by the Agricultural Experiment Station at the State College of Washington, indicated that a homemaker saves arm motions and steps when her dishwasher is on the left of the sink. Another part of the study determined the length of a standard counter (24 in. in depth) needed to stack dishes while using an automatic dishwasher. A 30- to 40-in. counter, adjacent to the sink to use to stack dishes before loading the dishwasher is recommended. The counter length to be used for unloading the dishwasher depends on where the dishes are to be stored.

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

Vol. 20, April, 1951

* Uraemia and its treatment. C. H. Primlani.—p. 258.

Vol. 20, June, 1951

* Protein component of food in nutrition. B. B. Mukherji.—p. 319.

Vol. 20, July, 1951

Nutritional oedema leading to spontaneous hypoglycaemia. D. G. Mazumdar and K. L. Mukherji.—p. 361.

Idiopathic spontaneous hypoglycaemia. P. K. Chatterfee and B. Basu Roy.—p. 374.

* A case of perforated peptic ulcer—successfully treated without operation. B. Basu Roy.—p. 375.

Spontaneous hypoglycaemia. Editorial.—p. 377.

Uremia. Symptoms and physiologic conditions associated with uremia are described. Treatment consists of: (a) less protein in the diet, (b) large intake of fluids, and (c) excretion of the poisons. One investigator forces his patients to eat 200 gm. butter and 20 gm. sugar daily. To make this combination palatable, a little bread or coffee may be be given. With this diet a patient can have complete anuria for twenty-five days without showing signs of serious uremia. Once in three weeks a plasma transfusion may be given to make up the loss of body proteins. Methods of excretion of the poisons are described also.

Protein. This article reviews simply and briefly what is generally known concerning the place of protein in nutrition. Topics discussed are metabolism, storage requirement, protein sparers, classification of dietary proteins, essential amino acids, relation of proteins and amino acids with certain vitamins, results of protein-deficient diets, and the role of protein in injuries and certain diseases.

Perforated Peptic Ulcer. A case study of treatment of perforation of peptic ulcer without surgery is reported. Nothing was given by mouth for four days. On the fifth day, an intragastric drip feeding of protein hydrolysate (1 oz. to a pint) in 5 per cent glucose solution in normal saline was begun. On the eighth day, milk was given during the day and protein hydrolysate solution at night. Foods by mouth were started after about two weeks in the hospital. Milk, egg-flip, and protein hydrolysate solution were used alternately every 2 hr. for one week; this was followed by a modified Sippy treatment. This conservative treatment is recognized for people who have an inherent dread for operation, where facilities for emergency abdominal operations are limited, and if the patient has not eaten or drunk large amounts before perforation.

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THE JOURNAL OF NUTRITION

Vol. 45, November, 1951

The relation of vitamin B_{12} and folacin to the utilization of choline and its precursors for lipotropisms and renal protection in rats. D. R. Strength, E. A. Schaefer, and W. D. Salmon.—p. 329.

* Effect of frying bacon on the nutritive value of the protein. B. H. McBride, B. T. Guthneck, E. Hoffert, D. Knickel, and B. S. Schweigert.—p. 393.

* The effect of level of intake on calcium and phosphorus metabolism in college women. J. M. Leichsenring, L. M. Norris, S. A. Lamison, E. D. Wilson, and M. B. Patton.—p. 407.

* Plasma vitamin A and carotene determinations in a group of normal children. B. B. Szymanski and B. B. Longwell.—p. 431.

West Indian and New Orleans Negro metabolism tests. D. P. Quiring—p. 443.

Effect of Frying Bacon on Nutritive Value. The effect on the protein of bacon due to cooking was investigated. Lyophilized and ether-extracted bacon was fed as the sole source of protein at a 10 per cent level in the diet of weanling rats. No reduction in protein utilization was observed in three tests with crisp-fried bacon, or in one test with limp-fried bacon as compared to control groups receiving uncooked bacon. A small, but statistically significant reduction in the nutritive value of the protein was observed for one test with crisp-fried bacon. The percentage weight losses of the bacon during cooking and the approximate analyses of the cooked and uncooked products are presented.

Calcium and Phosphorus Metabolism. A major nutritional problem today is that of supplying the amounts of calcium which authorities recommend. Calcium and phosphorus metabolism were studied on seventeen college women from two states. Five subjects, two in Ohio and three in Minnesota, were maintained for a period of eight weeks on a basal diet which supplied approximately 300 mg. calcium and 800 mg. phosphorus daily. A second group of six subjects, three in Ohio and three in Minnesota, were maintained on the basal diet for four weeks. This was followed immediately by a four-week period during which the basal diet was supplemented by 1200 mg. calcium making the total intake 1500 mg. daily. A third group of six subjects following the four-week period on the basal diet received supplements of calcium and phosphorus, making the total intake 1500 mg. calcium and 1400 mg. phosphorus. Increasing the calcium intake from 300 mg. to 1500 mg. without altering the phosphorus intake resulted in a statistically significant increase in calcium retention. Urinary calcium excretion increased significantly. Phosphorus retention was unchanged, but there was a decrease in the urinary excretion. When supplements of both calcium and phosphorus were added to the basal diet, calcium retention was somewhat greater than on the unsupplemented basal diet, but was very much less than when the basal diet was supplemented with calcium alone. Phosphorus retention was not influenced by the change in calcium and phosphorus intake. Within the limits of this investigation, the amount of phosphorus in the diet would appear to be a factor of considerable importance in determining calcium utilization in adults.

Plasma Vitamin A and Carotene. The plasma vitamin A and carotene levels of ninety-five healthy children from two days to sixteen years of age are described and the deviation with age shown. Plasma vitamin A correlated slightly with the amount of vitamin A concentrate given, while plasma carotene showed a much higher concentration with intake of carotene from plant sources. Infants showed a significant sex difference in both vitamin A and carotene levels, the girls having higher values. Just before the start of adolescence in girls, the reverse sex difference appeared, but this time in plasma carotene only—girls having much lower values. As the boys approached adolescence, it was found their carotene levels dropped. There was a significant seasonal variation in plasma carotene, but not in vitamin A.

JOURNAL OF PEDIATRICS

Vol. 39, November, 1951

* Growth and development of infants receiving a proprietary preparation of evaporated milk with Dextri-Maltose and vitamin D. L. H. Frost and R. L. Jackson.—p. 585.

Growth and Development of Infants. Fifty-seven young infants have been observed over a varying period up to ten months of age while receiving a simplified formula consisting of evaporated milk fortified with 400 I.U. vitamin D and Dextri-Maltose to which water alone was added in preparation. On the basis of this study, it has been shown that infants fed this formula (with vitamin supplements and the usual additions of solid foods) have mean height and weight curves slightly above normal and present a normal or superior picture of general development. Thus this formula can be a most useful addition to the field of infant feeding.

THE LANCET

Vol. 2, October 20, 1951

Hepatic glucose output and hepatic insulin sensitivity in diabetes mellitus. A. G. Bearn, B. H. Billing, and S. Sherlock.—p. 698.

Vol. 2, October 27, 1951

* Potassium lack in the postgastrectomy dumping syndrome. W. H. Smith.—p. 745.

Potassium Lack in the Postgastrectomy Dumping Syndrome. Postprandial attacks of palpitation and muscular weakness are probably the most common complication of present-day gastrectomy. The most likely cause of the dumping attack is over-rapid entry into the jejunum of unprepared food. During a dumping attack, there is abnormal fall of serum potassium and evidence of impaired function of voluntary muscle. These two mechanisms contribute to the low potassium in the blood serum and lead to the release of some adrenalin-like substance into the blood. There is also unduly rapid absorption of ingested carbohydrate, leading to rapid deposition of glycogen and binding of potassium inside the glycogen storing cells.

THE MILBANK MEMORIAL FUND QUARTERLY

Vol. 29, July, 1951

Nutritional status of selected population groups in Oregon. II. Biochemical tests on the blood of native born and reared school children in two regions. C. A. Storvick, M. L. Hathaway, and R. M. Nitchals.—p. 255.

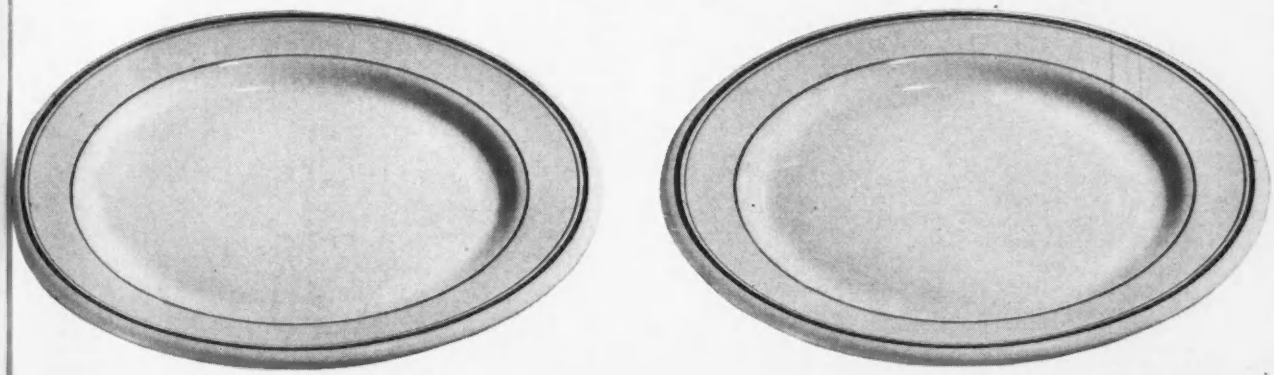
THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 245, November 22, 1951

* Prolonged cation-exchange resin therapy in congestive heart failure. C. Voyles and E. S. Orgain.—p. 808.

Cation-Exchange Resin Therapy. Three patients suffering from long-standing congestive heart failure who had responded poorly to conventional methods of treatment, including rigid dietary sodium restriction, have been studied during the continuous administration of cation-exchange resin for periods of five to nine months. Each showed definite improvement while taking resin, as evidenced by stability of weight, failure to develop edema, improved exercise tolerance, and lowered requirement of mercurial diuretics. Frequent determinations of serum and urine electrolytes were made. Extremely low levels of 24-hr. sodium excretion were noted. No serious serum-electrolyte disturbances were observed. No unfavorable signs or symptoms were encountered, despite the concomitant continuous use of relatively strict low-sodium diets and resin. It is believed that compensation would not have been possible in these cases without use of cation-exchange resin.

WHICH IS THE CLEAN DISH?



BLACK LIGHT TELLS YOU THE TRUTH!

Dish washed with ordinary compound

SUPER SOILAXED dish

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PROOF THAT THE SUPER SOILAXED DISH is the SANITARY DISH!

THAT'S RIGHT...you can't fool "black light"! No matter how clean utensils may appear under ordinary light, when they are exposed to these special rays, all hidden food soil gives off a fluorescent glow. Just look at the *unretouched* photos above!

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Your tableware *really* becomes as *healthfully clean* as its sparkle indicates—when you use Super Soilax. Get the facts about this super dishwashing compound and the Super Soilax Service that backs it up. Write for Free copy of "Dishwashing Dividends."

Remember the Service Behind the Product!

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Also manufacturers of TETROX for manual dishwashing, and PAN DANDY—new, activated pot and pan washing compound.

FIRST IN FOOD UTENSIL SANITATION!

NUTRITION ABSTRACTS AND REVIEWS

Vol. 21, July, 1951

* Vitamin B_{12}. Part 2. A review of the clinical aspects. C. C. Ungley.—p. 1.

Clinical Aspects of Vitamin B_{12}. This review of the clinical aspects of vitamin B_{12} is concerned primarily with the effects of oral and parenteral administration of the vitamin to human subjects suffering from megaloblastic anemias. Current views of the role of Castle's intrinsic factor in the absorption and utilization of the vitamin are presented also, along with a discussion of its fate after oral and parenteral administration.

NUTRITION REVIEWS

Vol. 9, November, 1951

* Nutrition and aging. J. E. Kirk.—p. 321.

Is the caries-producing potentiality of food predictable?—p. 333.

Nutrition and industrial output.—p. 340.

Norms and validity of measures of relative leanness-fatness in man.—p. 344.

Nutrition and Aging. Suggestions are given for the procurement of actuarial data on individuals who for a period of several years during their childhood were voluntarily subjected to a restricted caloric intake, as was the case in Central Europe after the World War I. Thereby, some evidence might be obtained on human beings which would be somewhat comparable to the work of McCay on rats, which has demonstrated that caloric restrictions during the period of growth results in a notable increase in life span. Thus far the majority of the data on nutrition of the aged has been limited largely to institutionalized individuals. Suggestions are given that an increased tissue breakdown is caused chiefly in old individuals by the change in the ratio between catabolic corticosteroids and anabolic androgens in men and estrogens in women. The high incidence in negative nitrogen balance and lowered blood levels of thiamine and ascorbic acid in the aged is discussed.

PUBLIC HEALTH NURSING

Vol. 43, December, 1951

* Diet suggestions for the tuberculous on low income. H. R. Edwards and J. Turner.—p. 681.

Diet for Tuberculous on Low Income. The family approach is emphasized as the key to a sound tuberculosis control program, in dietary as well as other ways. An optimum diet is recommended for the individual with tuberculosis, owing to the increased need for protein, vitamin A, and ascorbic acid. Such a diet is equally desirable for the family so that a high level of disease resistance may be obtained. Economy tips are given. The authors recommend that public relief agencies augment the allowance to welfare families where tuberculosis is a problem to conform to the optimum diet suggested.

PUBLIC HEALTH REPORTS

Vol. 66, November 9, 1951

Salmonella mendoza: a new Salmonella type. R. H. Leiguarda, O. A. Peso, A. Z. R. de Pelazzolo, and E. M. Ansiaume.—p. 1478.

Vol. 66, November 23, 1951

Complex fluorides: caries reduction and fluorine retention in the bones and teeth of white rats. I. Zipkin and F. J. McClure.—p. 1523.

Relative pathogenicity of certain Salmonella strains for man and mice. N. B. McCullough.—p. 1538.

QUARTERLY BULLETIN OF NORTHWESTERN UNIVERSITY MEDICAL SCHOOL

Vol. 25, Winter, 1951

* Riboflavin intake—excretion relation in man. O. E. Lobstein, M. H. Meyer, and S. J. Fogelson.—p. 329.

Riboflavin Intake-Excretion Relation. An effort has been made to determine the riboflavin balance of man. A definite amount of riboflavin was ingested orally each day, and the urine was assayed for excreted riboflavin. The data demonstrate that man seems to have no storage capacity for riboflavin if the intake is kept above a certain minimum (about 1000 mcg. per day). An increased riboflavin intake resulted in a quantitative increase of urinary excretion; a decrease in intake resulted in a quantitative decrease of urinary excretion.

SOUTHERN MEDICAL JOURNAL

Vol. 44, November, 1951

* Medical treatment of peptic ulcer. A. Weinstein.—p. 1008.

Medical Treatment of Peptic Ulcer. The motility and secretory activity of the stomach are inhibited by fats and fatty acids, proteins, sugar in high concentration, and hydrochloric acid. Pain, physical fatigue, apprehension, mental strain, shock, or depression all act to inhibit gastric emptying, while nervousness and anxiety tend to increase it. Drugs, such as alcohol, coffee, sodium bicarbonate in small amounts, histamine, and insulin, increase peristalsis and secretion, while smoking, atropine, and anoxemia depress peristalsis. Smoking, however, stimulates gastric secretions. A good diet for ulcer contains a fair amount of fat and is not of too great volume. Such a diet does not include coffee and alcohol which cause an increase in the secretion of hydrochloric acid. The diet and treatment should be worked out for each patient as an individual.

SURGERY, GYNECOLOGY AND OBSTETRICS

Vol. 93, July, 1951

The relation of body fluid compartments to body fat. J. D. Hardy, P. K. Sen, and D. L. Drabkin.—p. 103.

Vol. 93, August, 1951

Collective review: amino acid mixtures as parenteral protein food. G. B. Ramasarma.—p. 105.

AMERICAN RESTAURANT MAGAZINE

Vol. 35, December, 1951

* Profits in pennies with simple cost charts. R. D. Andersen.—p. 42.
* Answers to some common school food problems.—p. 48.
* "Guesstimating" a year-end inventory can cost you money. H. J. Ashe.—p. 50.

Profits in Pennies. Food cost control charts, as used by a Cleveland restaurant, are illustrated in this article and discussed in relation to careful cost planning.

School Food Problem. Ways to increase milk sales, to keep pupils from favoring ice cream and candy concessions over hot lunches, and to heighten interested participation in the school lunch program by students and parents were among the topics discussed in November at a meeting of the Illinois School Food Service Association, held in connection with the 13th annual convention of the Illinois State Restaurant Association. Food service leaders have used many methods successfully in their schools, and they are outlined here.

"Guesstimating." Year-end inventory must be meticulous for best results, this author warns; haphazard guessing can result in a higher income tax bill for the time "saved."

COLLEGE AND UNIVERSITY BUSINESS

Vol. 11, December, 1951

* Keeping food service costs in line. T. W. Minah.—p. 49.

(Alex W. Spence Junior High School, Dallas, Texas)

Young America loves dessert

To satisfy the youthful appetite . . . or stimulate the jaded one . . . there's nothing to surpass cool, flavorful Sexton gelatine desserts, or attractive and tasty Sexton puddings. Economical too! Scarcely any food gives so much satisfaction at so little cost. As for quality, the delicious flavor, sparkling clarity, quick jelling and ability to keep their good looks, result directly from our insistence upon the finest ingredients and carefully controlled processing in our Sunshine Kitchens.

Sexton
Quality Foods

JOHN SEXTON & CO., CHICAGO, 1952

Keeping Food Service Costs in Line. Duke University dining halls are the model for this article on controlling food service costs. A follow-up of every expense incurred in the operation of dining halls is urged. Cost problems are discussed from nine standpoints: management; procurement of food and supplies; receipt of food and supplies; storage and warehousing; issuing of food and supplies; menu planning and food preparation; service and selling; housekeeping and personnel; and office and accounting.

FOOD ENGINEERING

Vol. 23, November, 1951

* Tinless cans.—p. 162.
Microbial growth in sausage depends upon casing used.—p. 170.
* Egg powder keeps longer when packed in CO_2.—p. 175.
* Teflon-coated bread pans.—p. 187.

Tinless Cans. In one of the two new processes for making tinless cans, a roll of aluminum foil is coated with plastic. It is heated and rolled in a tube under pressure. The number of layers determines the strength of the containers. The strength depends on the product canned. Heat is used to seal the seams. Aluminum tops and bottoms are used. In the other process, two coats of aluminum foil are welded on both sides of a heated steel sheet. The three layers are rolled together. The new types of cans are not yet available for commercial use.

Egg Powder Keeps Longer When Packed in CO_2. Carbon dioxide has been found to be a more effective gas packing agent for spray-dried whole egg than nitrogen or air, according to tests carried on in Australia.

Teflon-Coated Bread Pans. The use of an 0.001-in. film of Teflon on the inside of bread pans eliminates the costly job of greasing the bread pans for at least 220 bakings. This technique is still in the experimental stage.

FOOD TECHNOLOGY

Vol. 5, September, 1951

* Objective measurement in quality control of frozen foods. J. L. Heid and B. W. Nielsen.—p. 347.
* Fruit flavors. J. H. McGlumphy.—p. 353.
* Food processing with ionizing radiations. B. E. Proctor and S. A. Goldblith.—p. 376.

Vol. 5, October, 1951

Preparation of stable frozen sauces and gravies. H. L. Hanson, A. Campbell, and H. Lineweaver.—p. 432.

Vol. 5, November, 1951

Control of sanitation in food and drug plants. C. A. Herrmann.—p. 452.
* Some considerations in measuring the life expectancy of baked goods. C. F. Davis and R. H. Hower.—p. 462.
Development of a new process for curing coffee. W. R. Johnston and H. E. Foote.—p. 464.
New developments in meat products. H. R. Kraybill.—p. 485.

Measuring Frozen Food Quality. This article deals specifically with frozen citrus fruits and juices. Objective testing of frozen fruit products, the authors state, is receiving attention so that acceptability may be predicted with greater accuracy and precision. This testing contains various yardsticks for appearance, texture, flavor, and food value, which are important indices of acceptability. Objectives tests, moreover, are more easily applied and have more reproducible results than the subjective, or sensory, type of tests. Subjective tests, i.e., by individual tasters, are over-influenced by human factors, such as acuity of taste perception, ability to differentiate continuously, physical and mental condition, and transient or permanent prejudices. Various objective tests are reviewed.

Fruit Flavors. Recent years, with their high fruit prices, have necessitated the adoption of new processing techniques for extract manufacturers. The flavor chemist, once an "artist," now must work with the organic chemist and with developmental and equipment engineers. Results have been highly satisfactory as far as *maintaining* flavor is concerned, but scientists are now working on methods of *increasing* flavor. In Europe, fermentation has been tried, sometimes with rare wine yeasts, but such a process has tended to lessen fidelity to a point that makes it difficult for the taster to determine what fruit was used. Researchers in this country are studying photosynthesis by the use of radioactive tracer elements. Sucrose, they have found, is the first and possibly the key product of photosynthesis, but prevention of the Maillard or browning reaction—a hindrance to flavor—has yet to be perfected.

Ionizing Radiations for Food Processing. Research in the last decade has shown that foods and drugs can be sterilized by ionizing radiations without heat. Ten factors to be considered are listed; some are identical with those to be considered in heat radiation, others are entirely different. Among them are types of radiation, specific inactivation doses, effects on foods and enzymes, cost, and equipment. Massachusetts Institute of Technology has treated numerous foods and food products, as well as vitamins, by cathode ray irradiation. One major problem is the protection of people from radiation, which is as dangerous to them as to the microorganisms.

Life of Baked Goods. Mortality tables cannot be made up for food products as they can for people; edibles have no exact "death-hour" or end-point of acceptability. The peak of acceptability, the article states, marks the time a food should reach the customer. The ensuing period is considered deterioration. Experiments with the shelf-life of baked goods were made with the Schaal oven test, but did not correlate well with actual findings.

HOSPITALS

Vol. 25, December, 1951

* Food service on an assembly line. J. T. Black.—p. 53.

Food Service on Assembly Line. Michael Reese Hospital, Chicago, has recently completed a new food service unit for three patient floors. It serves as a prototype for the development of similar units and consists of a combination food preparation and serving kitchen. The kitchen centers around a conveyor-belt assembly line on which 300 patients' trays are assembled. Diagrams of the service are shown in three floor plans, and the changes in management necessitated by the new arrangement are described. The new style of service is contrasted with the old, and spacing and timing analyzed. Further information is to be published in a second article.

HOTEL MANAGEMENT

Vol. 60, November, 1951

* How to handle employee grievances. C. H. Broaded.—p. 68.
* How to improve personnel relations. C. R. Strand.—p. 73.

Handling Employee Grievances. Department supervisors should know how to recognize a grievance when it exists and take action to remove the basic causes. A private interview with the employee should be given to determine the facts of the case and to indicate the necessary action. The employee should be told the decision reached by the management and be convinced that the action is fair.

Improving Personnel Relations. New employees should be oriented by a personal introduction to supervisors and workers. Responsibilities and company policies should be defined and a field trip made. Job analysis and merit ratings eliminate hard feelings toward wage scales and aid in employee promotion. Observation of union rights is also necessary for cooperation. Healthy working conditions, adequate facilities, and a just management help to make employees satisfied.

THE TRUTH ABOUT FROZEN ORANGE JUICE

Significant Dietary Advantages Of Fresh-Frozen Minute Maid Orange Juice Over Home-Squeezed Orange Juice Shown By Independent Research

RECENT assays[1] emphasize the nutritional superiority of reconstituted Minute Maid Fresh-Frozen Orange Juice over home-squeezed orange juice in three important respects:

a. Average levels of natural ascorbic acid were significantly *higher* in Minute Maid;

b. Peel oil content was significantly *lower* in Minute Maid;

c. Bacterial counts were dramatically *lower* in Minute Maid.

Two chief reasons for Minute Maid's higher ascorbic acid content are advanced by qualified technical experts:

First, oranges vary widely in ascorbic acid content due to differences in varieties, rootstocks, and exposure to sunshine during ripening.[2] Thus, whole oranges, squeezed a few at a time in the home, provide a highly erratic source of Vitamin C. Yet because this vitamin is not well-stored in the body, optimum nutrition makes desirable a uniformly high intake. Each can of Minute Maid, however, represents the pooling of juice from hundreds of thousands of oranges; thus wide variations in nutrients from orange to orange tend to be eliminated.

Second, because it is frozen, Minute Maid loses none of its ascorbic acid content during the time lag between producer and consumer.[3] Whole fruit, however, is subjected to variations in temperature, and care in handling cannot be maintained throughout the journey from tree to table. Controlled laboratory tests have shown an average ascorbic acid loss of 10.7% in whole oranges after 11 days under simulated storage and shipping conditions.

Peel oil, previously shown to cause allergic response and poor tolerance, especially in infants,[4] is held to an arbitrary minimum in Minute Maid. Samples of home-squeezed juice expressed by typical housewives showed peel oil contents up to 700% higher than Minute Maid.

Bacterial counts were found to be as high as 350,000 per ml. in home-squeezed samples—but were uniformly low in Minute Maid. Technicians ascribe this to the combination of rigid sanitary controls in the Minute Maid process and the low pH and low temperatures at which the juice is kept. In the case of home-squeezed juice, high bacterial counts are doubtless due to contamination from the exterior peel which is unknowingly added to the juice during preparation.

In view of the above findings, more and more physicians now specify Minute Maid Fresh-Frozen Orange Juice in lieu of home-squeezed orange juice where optimum year-around intake of natural Vitamin C is indicated.

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(2) *U. S. Department of Agriculture Technical Bulletin No. 753, December, 1940.*

(3) *Roy, W. R., and Russell, H. E., Food Industries, Vol. 20, pp. 1764-1765 (1948).*

(4) *Joslin, C. L., and Bradley, J. E., Journal of Pediatrics, Vol. 39, No. 3, pp. 325-329 (1951).*

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MINUTE MAID CORPORATION, 488 Madison Ave., New York 22, N. Y.

Wallace R. Roy, Ph.D., Director of Research

ICE CREAM REVIEW

Vol. 35, October, 1951

* America's first ice cream cafeteria.—p. 48.

Ice Cream Cafeteria. Have you always wanted a chocolate-raspberry-marshmallow sundae with butterscotch sirup and six kinds of nuts? A Cleveland store is now ready to supply such monstrosities if you wish. The dream of an Ohio ice cream man has now been realized in an ice cream cafeteria opened last July, where wide selection and generous portions of topping keep customer trade moving when curiosity has died down. The customer merely selects ice creams, toppings, and sirups to taste—paying à la carte—and gives special orders for malted milks, sodas, and milk shakes to the attendant when he begins his "tour." An attractive layout makes a generous display possible.

INSTITUTIONS

Vol. 29, December, 1951

* Let "humanics" cut placement woes, hike performance.—p. 1.
* Use charts, graphs to clarify efficiency evaluation statistics. D. E. Lundberg.—p. 1.

Output up, prices ditto in nation's '52 food picture.—p. 1.

* Safe service of food requires sanitation plan. W. H. Haskell.—p. 3.

Uncommon carrier: electronic food service.—p. 118.

"Humanics" vs. Mechanics in Personnel. "You have to hire a *whole man*," this article states; not only his hands and feet, but his entire personality is necessary. If a man could work like a machine, personnel problems would be over. Institutions are particularly vulnerable if they lose sight of this fact; a surly person can serve as efficiently as an amiable one—but the effect on public relations, naturally, is ruinous. Hiring, this article contends, is at the root of much of the trouble; man-against-job checking and the warm democratic welcome are often left behind for mechanized impersonality at the cost of mutual employer-employee knowledge at the start of the job. Employment tests suitable for institutional workers are discussed, together with the importance of having the final decision in hiring rest with the immediate supervisor or department head, so that ". . . the newcomer understands that *his own boss* has selected him for the job . . . [and] starts work with a greater sense of security and loyalty—and the 'boss' starts with a greater degree of interest in the man's growth and development."

Charts, Graphs Clarify Statistics. Statistics presented in the form of charts and graphs simplify and make more accurate evaluation of any food service operation's efficiency. The author describes a thorough system of charting, with a comprehensive check list covering all phases of restaurant operation, including sanitation and customer appeal.

Safe Service Needs Sanitation. School lunch sanitation, recently surveyed, is evaluated here; the author cautions that "it is difficult to criticize the bad without casting doubt on the good"; emphasis is placed on the many school lunch facilities with uniformly impeccable sanitary facilities; but a report is given of one large school in which the conditions were dangerously unclean. Rules are then set forth for maintaining a clean kitchen and serving area.

THE MODERN HOSPITAL

Vol. 77, December, 1951

* The ulcer diet. M. P. Huddleson.—p. 120.

The Ulcer Diet. Monotony need not mark the diet of the average ulcer patient, except during the acute phases of peptic ulcer when a modified Sippy diet is in order. Delicate flavors are emphasized in this article; food need not be tasteless, although it must be free from strong flavor or irritating consistency. Concluding the article is a statement that, in time, the patient may learn to appreciate the natural flavor of foods without requiring "sauce and high seasoning."

PERSONNEL JOURNAL

Vol. 30, December, 1951

* Executive development—the personnel man's challenge. M. I. Pickus.—p. 255.

Executive Development. Leadership training has been sadly neglected in the past quarter of a century, the article states. Necessary preoccupation with the depression and World War II has created an extreme shortage of qualified managers due to lack of training of successors. Managers can be divided into four classes; brilliant and industrious; brilliant and lazy; stupid and lazy; and stupid and industrious. The last class is the most common and by far the most dangerous, because great damage may result from ill-advised and zealously carried-out plans developed by such people. The "brilliant and lazy" class is noted as the most valuable, as they tend to maintain perspective by avoiding unnecessary detail. Qualities of a good manager are listed, and requirements of a good program for developing executives are explained.

RESTAURANT MANAGEMENT

Vol. 69, November, 1951

* How a two-way belt conveyor fills orders and removes soiled dishes. P. Brenton.—p. 37.
* Modern miracles with pork. P. P. Logan.—p. 42.
* Planning for mass production in a modern chain commissary. J. T. Lucas.—p. 46.
* Firing noise from your staff. C. J. Nocar.—p. 52.

Conveyor Belt Speeds Service. Twelve employees serve 29,000 customers a month in the Detroit department store fountain-restaurant with 44 seats giving 15-min. turnovers. It is described in this article. The first commercially successful automatic counter service, which combines a double-purpose conveyor belt with seeing-eye robot controls has been installed. Orders are sent from the four stations via an intercommunicating system, and each station is marked by a control color. The itinerary of an order is described, as is the construction of the belt.

Miracles with Pork. "Perfect meat machine" is packers' pet name for the pig—and this installment in this series stresses the pig's reputation of being our quickest source of meat. Details of processing the pig are given, as well as diagrams and clear descriptions of the standard pork cuts. By-products of pork and possibilities for canned pork products are also mentioned.

Commissary Mass Production. Maximum quality and economy are the result of two years' planning, in a new Long Island commissary. Commissary preparation was chosen as the best suited to the chain of sixty-one restaurants which would receive the food, for two reasons: (a) the units are all in one metropolitan area and easily reached by truck; and (b) a single commissary insures better and more uniform quality standard control than does preparation of food by individual stores.

Stop That Noise! Needless noise is often an unrealized "hidden cost" in a restaurant payroll—adding to overhead, impairing efficiency, and annoying customers. Labor unrest, low morale, and actual physical and mental harm can be caused by working in a noisy area—and sound control must be effected in rooms where employees must work hard and fast for efficient operation. Noise, defined as unwanted sound, can be controlled by sound-absorbing materials, not only in acoustical ceilings and walls, but also in flooring and by using rubber or felt pads in silver bins, on waiters' trays, and at the cashier's desk.

Genuine JELL-O dishes can help you cut your food costs!

Even in these days of high food costs, there are literally *hundreds* of tempting, unusual Jell-O treats like these that you can serve at a cost of only a few pennies per serving!

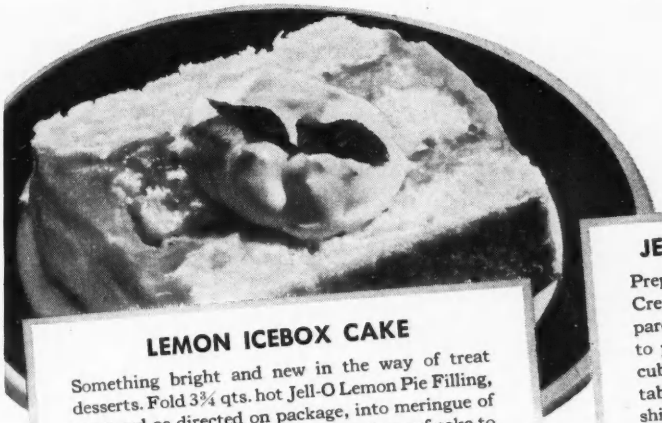
They're quick and easy to prepare, yet they're real customer-winners, too. For every Jell-O dish is a *quality* dish. Jell-O has been America's favorite brand of packaged desserts for over 50 years!

So why not try the Jell-O way of making desserts and salads? You'll be amazed not only at the amount of money you save but also at what genuine Jell-O dishes can mean in terms of increased quality . . . volume . . . and customer acceptance.

NEW MANHATTAN SALAD

Dissolve 1 lb. Lemon Jell-O and 1 tablespoon salt in 2½ qts. hot water; add ⅝ cup vinegar. Chill until slightly thickened, then fold in 3 cups red-skinned apple wedges, 2½ cups chopped pecans, and 3 cups diced celery. Mold, chill, and serve on greens with mayonnaise. Serves 32 happy people at a cost to you of only about . . .

3½¢ PER SERVING!



LEMON ICEBOX CAKE

Something bright and new in the way of treat desserts. Fold 3¾ qts. hot Jell-O Lemon Pie Filling, prepared as directed on package, into meringue of 8 egg whites and 1 cup sugar. Cut pieces of cake to fit 8" x 4" x 3" pans and split into ½" layers. Place in 8 pans, layering 3 cake slices with 2 layers hot filling. (Use 1½ cups filling between each layer.) Chill thoroughly, and serve in 1" slices to 64 delighted customers. This wonderful new treat costs you less than . . .

3¢ PER SERVING!

JELL-O TAPIOCA PARFAIT

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News Notes

Food and Nutrition Board Meeting. Dr. Helen A. Hunscher, A.D.A. liaison representative, attended the meeting of the Food and Nutrition Board of the National Research Council in Washington on November 9 and 10. A new member of the Board is A.D.A. President, Dr. Margaret A. Ohlson.

At the meeting, Dr. John D. Black reported that Americans have an "ample food supply for a price," and that production levels and intensity have gone up over the years by increased use of technology which could be even more widely applied for greater yield.

New NRC Publications. The report of the Committee on Food Protection will be available soon, giving the Committee's deliberations on the reasons for use of chemicals in foods and the basic principles which should govern their use. The Committee on Therapeutic Nutrition reported that the publication, *Therapeutic Nutrition*, originally written for the armed forces, is being revised for civilian use. A symposium of physicians, nutritionists, and vitamin manufacturers is expected soon to help determine therapeutic vitamin needs and new methods for determining deficiencies.

A re-evaluation of the adult calcium allowance, as given in the Recommended Dietary Allowances, may be made as studies on evaluation now in progress are completed. A review of the literature on dental health is ready for publication. It will provide a fundamental source of material for those interested in dental nutrition.

The Committee on Maternal and Child Feeding reported that their plans for review, evaluation, and publication in four areas—breast feeding, composition of milks, maternal nutrition and child health, and nutrition of the adolescent—are almost complete. Publications on the first three have been released, and a report on the fourth is near completion.

WHO Regional Organization. Full development came to the WHO regional system early in September when sixteen European countries decided to form a Regional Organization. This decision—which brought to completion the three-year-old list of regional groupings—took place in Geneva at a meeting of the WHO Committee for Europe, which immediately thereafter met as a Regional Committee. The Committee recommended that the Regional Office temporarily share the Geneva facilities of WHO headquarters.

The list of its recommended activities can be divided roughly into two parts: first, those designed to benefit the European region as a whole; second, national WHO-assisted health programs in twenty countries. The first category is the larger, including over thirty projects. Most of these are technical training schemes, such as assistance to schools of public health and seminars and training courses on various aspects of health.

Dr. Norman D. Begg of Aberdeen, Scotland, formerly Chief of the WHO Special Office for Europe (now replaced by the Regional Office), has been nominated to the post of Regional Director.

International Sanitary Regulations. In appraising the work of the World Health Organization today, the September issue of the *Chronicle of the World Health Organization* states that the major achievement to date is the adoption of the new International Sanitary Regulations by the Fourth World Health Assembly, held in Geneva, Switzerland, last May. The new regulations are binding to all member states of the Organization, except those who, within a specified period, have made known either their reservations or their refusal. Thus, all member states will be operating under uniform regulations. Up to now, various countries have followed regulations of 1903, 1905, 1912, 1924, 1926, 1933, 1934, and 1944, some not having adopted new conventions as they were made.

The new sanitary regulations comprise ten parts. The first three deal with definitions, notifications, epidemiologic information, and sanitary organization. The next two parts include general measures applicable to all quarantinable diseases and provisions relative to each. Other parts deal with sanitary documents, sanitary changes, and various provisions regarding the application of the Regulations. Appendices provide models of various documents and other data.

Provisions are included for international control among travelers of such diseases as smallpox, yellow fever, and cholera. Hygiene and sanitation of ports and airports are covered in the Regulations.

FAO-WHO Nutrition Report. The report on the second session of the Joint FAO/WHO Expert Committee on Nutrition, held in Rome from April 10 to 17, 1951, has been published as No. 44 of the World Health Organization Technical Report Series. In it the aid given many governments is outlined, including: WHO collaboration in establishing a nutrition institute at Zagreb, Yugoslavia; sending an expert in dietetics to the Medical College Hospital, Calcutta, to organize a training course for hospital dietitians; and technical advice to the Egyptian government on the development of public nutrition service.

An inquiry in Brazil, Ceylon, Colombia, Ecuador, Guatemala, and Mexico was made to determine incidence of endemic goiter; and research has been started to determine a simple and economical way to iodize crude salt which is used as a condiment in many countries.

Representatives of WHO and FAO have visited African countries to learn the incidence of kwashiorkor. This disease seems to be directly related to diet and occurs in a particularly severe form among peoples whose basic nutrition consists of manioc, plantains, yams, and maize, substances which are poor in proteins, both qualitatively and quantitatively. Animal proteins have a protective effect. Preventive measures advocated for Africa are probably applicable to other parts of the world. Essentially they consist in making available foods which can prevent the disease. Fish may be an essential food, since it is easier to obtain fish rapidly than to increase milk and meat production. Millet, sorghums, and rice should replace manioc whenever possible, and the growing of green vegetables in rural areas in the village kitchen-gardens should be expanded. The consumption of ground-nuts should be encouraged. Treatment with dried skim milk has brought about a striking fall in mortality from kwashiorkor in certain regions, but unfortunately in the majority of hospitals and dispensaries in the affected regions it is unavailable.

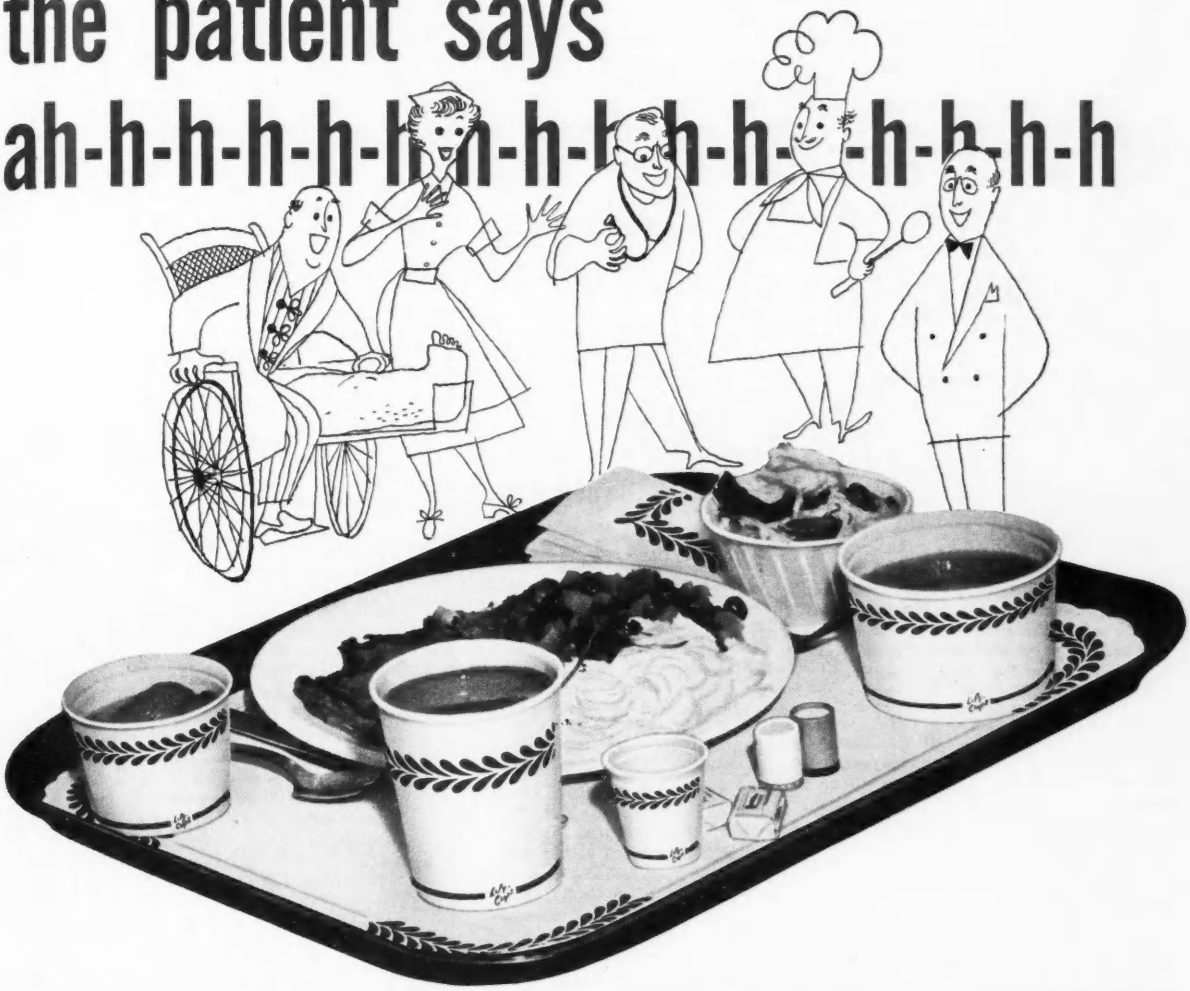
WHO has also collected information on surveys of nutritional status already done at the national level in order to study the way in which the problem has been approached. Among the criteria of value in such an assessment are morbidity and mortality rates, the study of the growth of infants and children, and possibly the number of premature births and stillbirths. Clinical studies can be used, including general inspection as well as detailed physical examination. This should be followed by laboratory tests and physiologic tests to reveal vitamin deficiencies. Laboratory tests can confirm clinical diagnoses, detect abnormalities before they assume clinical form, or diagnose parasitic infections.

Reports were also made by a group of specialists, including Dr. Ancel B. Keys, University of Minnesota, on preventing and curing severe malnutrition and on building up, preserving, and distributing foods during famine conditions.

A succeeding report released in November was the World Health Organization Technical Report No. 45 titled *Prevention and Treatment of Severe Malnutrition in Times of Disaster*. This is the report by the Joint FAO/WHO Expert Committee on Nutrition as presented to the Fourth World Health Assembly.

The first section of the report deals with food management, and the problems of supplies, rationing, appraisal of total food requirements, storage, and so on are considered. In the second section

the patient says ah-h-h-h-h-h-h-h-h-h-h-h-h-h-h-h-h



(...and so do nurses, kitchen help and management)

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physiologic, clinical, and therapeutic aspects are covered, including the varieties of starvation and severe malnutrition, as well as treatment. A bibliography of sixty-four references is also included.

This publication may be ordered from the International Documents Service, Columbia University Press, 2960 Broadway, New York 27, for 35 cents a copy.

World-Wide School Lunch Practices. The International Bureau of Education has published a report of school lunch practices in forty-three countries. This report is a compilation of replies to a questionnaire sent to the ministries of education in the various countries. In it, the questionnaire is reproduced, together with an over-all summary of the administrative organization in the various countries of school meals, recipients, financing, numbers of children participating (some figures are in percentages, some in numbers of actual participants), payment for meals, and types of meals served. Following the general summary, reports from the individual countries are given. Information on clothing is also included. The report, titled *School Meals and Clothing*, is International Bureau of Education Publication No. 129, and may be obtained for $1 from Columbia University Press, 2960 Broadway, New York 27.

Dietitian Wins McCall's Honor. Sister Mary St. Clara, Chairman, Home Economics Department, Clarke College, Dubuque, Iowa, was one of seven women honored in the January issue of *McCall's* magazine for service in radio. Sister Mary St. Clara, named the "radio executive performing the greatest public service to women," conducts a weekly broadcast over Dubuque station WKBB from the Clarke home economics tearoom. Through her efforts, she has "taught Dubuque women that homemaking is a career with great dignity, requiring one's best spiritual, mental, and physical efforts." She has been conducting the Clarke Radio Kitchen, a food demonstration broadcast, since 1937, with the two-fold purpose of serving Dubuque homemakers and giving students special training in home economics by coordinating the subject with allied fields, especially journalism and radio. A senior home economics major gives the food demonstration each week and two others read the script.

Mrs. Herbert Joins Forecast Staff. Elizabeth Sweeney Herbert, Household Equipment Editor, *McCall's*, and President-Elect, American Home Economics Association, has joined the staff of *Forecast for Home Economists* as equipment consultant.

Plentiful Foods. The U.S.D.A. has announced that the following foods will be plentiful during February:

Protein foods

Beans, dried (navy and baby Limas)
Buttermilk
Chickens—broilers and fryers
Cottage cheese
Eggs
Milk—nonfat dry solids
Pork
Tuna, canned

Fruits and vegetables

Orange juice, canned and frozen
Oranges
Prunes, dried
Raisins

Miscellaneous foods

Almonds
Honey
Pecans

American Diabetes Association Journal. *Diabetes*, the Journal of the American Diabetes Association, will now be the Association's official scientific and organizational publication replacing its annual *Proceedings* and its quarterly *Diabetes Abstracts*, both of which have been published for the past ten years. J. Richard Connelly, Executive Director, has announced that the new Journal will appear bimonthly beginning with the January–February 1952 issue and will be devoted to clinical and research reports on diabetes and related aspects of medicine.

Editor of *Diabetes* will be Dr. Frank N. Allan, Lahey Clinic, Boston, first Vice-President of the Association. Dr. Allan will be advised and assisted by an editorial board, chairman of which is Dr. Charles Best, University of Toronto, co-discoverer of insulin. Subscription rates for *Diabetes* to non-members of the Association will be $9 a year.

International Diabetes Federation Congress. A congress on diabetes mellitus, sponsored by the International Diabetes Federation, will be held at Leyden, Netherlands, from July 7 through 12, 1952. Further information can be obtained from: Dr. F. Gerritsen; 33, Prinzegracht; The Hague, Netherlands.

Correction. The price of *The Spice Sampler* by Edith Barber (reviewed in the October 1951 issue of the JOURNAL) has been increased from $1 to $1.50, we have been informed by the publishers, Sterling Publishing Company, 141 E. 44th St., New York 1.

Films. The *National Dairy Council* has sponsored a 15-min., 16-mm. color and sound film titled "Weight Reduction Through Diet." This film reports in picture form the weight-reduction study conducted at Michigan State College, the first report on which appears in this issue of the JOURNAL beginning on page 113. In this study, a comparison was made of the efficacy of the customary low-fat reducing diet as compared with an experimental diet of low-carbohydrate content. Greater success was reported with the experimental diet because of its satiety value. The reasons for an obese person's need to reduce are illustrated, as well as the story of the progress of the experiment. The film is procurable on loan from the National Dairy Council.

The Department of Institution Management, *New York State College of Home Economics*, has released two films and two sets of slides of interest to the dietitian. "Muffin Making" is a series of twenty-three black and white ($3\frac{1}{4}$ x 4 in.) slides with an accompanying script. "Alice, A Good Waitress" deals with a trained student waitress serving a luncheon. It is a 13-min., 16-mm. Kodachrome sound film. A series of thirty-eight slides (2 x 2 in.) taken from this film is also available. "The Operation of an Electric Mixer" shows three mixers of different size in an institutional kitchen. It is a 16-mm. Kodachrome sound film and runs approximately 12 min. These films and slides are available for loan or purchase from the Photographic Science Department, Cornell University, Ithaca, New York.

Cornell University Publications. The New York State College of Home Economics, Cornell University, has recently published three bulletins relating to dietetics. *Purchasing Food for Fifty*, Cornell Extension Bulletin No. 803, was written by Marion Wood Crosby and Katharine W. Harris. The content of this bulletin was taken from *Meals for Many*, their Bulletin No. 477, and consists of comprehensive tables which deal with purchase of all types of foods. The form in which the individual food is sold, servings from the pound or measure, average size of servings, and the amount to purchase for fifty servings are given for: frozen fruits and vegetables, canned foods, meat and fish, poultry, fresh vegetables and fruits, staples, and miscellaneous foods.

Work Safely in Your Community Kitchen by Dorothy M. Proud is Bulletin No. 843 in the same series. It is a four-page leaflet containing succinct "tips" on safety in the kitchen, from "Wear low-heeled shoes that fit" to "Never use an electrical cord that is worn through to the wire."

Sanitary Food Handling in Church, Community Center and Camp, also by Miss Proud, is Cornell Extension Bulletin No. 844. This leaflet warns against the lack of sanitary facilities available in preparing the average community meal; lack of adequate toilet and handwashing facilities; scarcity of hot water for dishwashing; absence of refrigeration in many cases; and unsupervised help unaware of the hazards. Raw milk, cream, and other products, as well as water from untested sources, are sometimes found. The leaflet presents facts about food handling as related to disease; "do's and don't's" for food handlers; and a concluding section on dishwashing.

Booklets on High-Altitude Baking. Colorado Agricultural Experiment Station and Agricultural Extension Service, Colorado A. & M. College, Fort Collins, have cooperatively prepared two booklets on baking in high altitudes. The first, *Mile-High Cakes* by Elizabeth Dyar, Chief Home Economist, and Elizabeth Cassel, Special Assistant, is Bulletin 404-A of the College. The second, *Quick Mixes for Altitude Baking*, Bulletin 415-A, was written by Ferne Bowman, Home Economist, and Elizabeth Dyar. Although these publications are not available for general distribution outside of Colorado, a limited number of

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Also, central service permits our dietitian to supervise all trays which ensures correct and uniform service for every patient. The reduced food scrapping and well-cleaned dishes returning from our floors tell their own story of the patient's enjoyment and benefits.

All of us at Oswego Hospital also appreciate the fine cooperation and service which you and your company have given us from the outset. It is a pleasure to recommend Mealpack and the fine service which goes with it. Your Company is welcome to use this letter, if desired, wherever our experience may help other hospitals.

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Director

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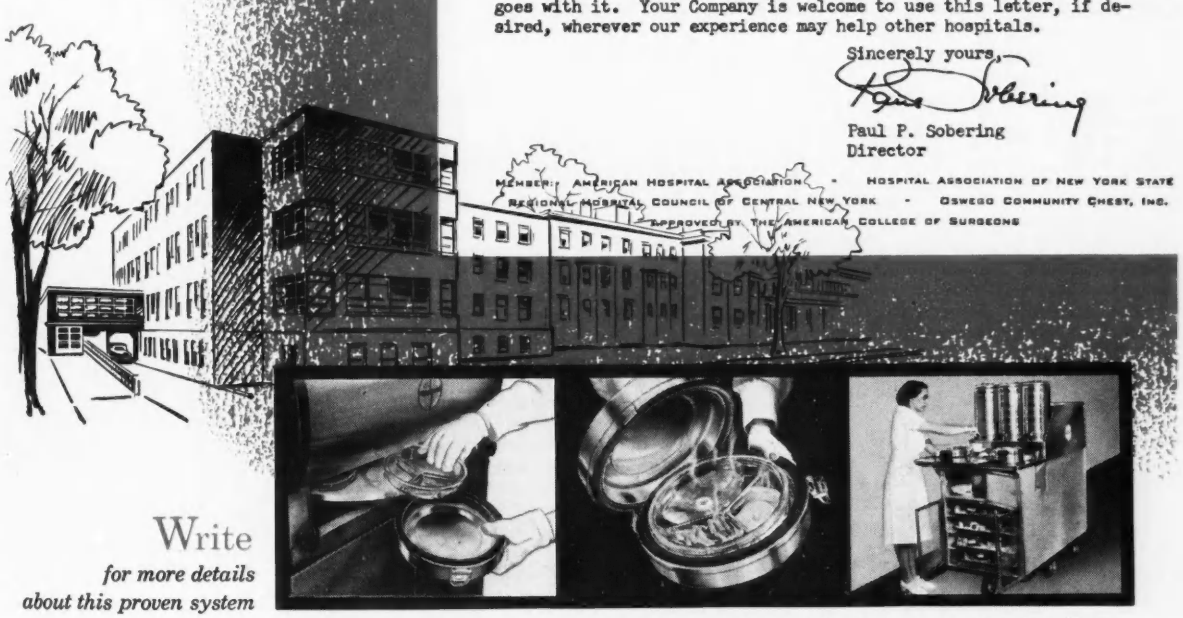

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Bibliography on Teaching Children Nutrition. *An Annotated Bibliography for Teaching Nutrition in Elementary Schools* is a new collection of material compiled by the Community Nutrition Section of the Cleveland Dietetic Association. References are listed under the following headings: "References for Teachers"; "Nutrition Material Useful in Many Units"; "Food and Health"; "Breakfast and Cereal Products"; "Dairy Products"; "The Farm"; "Nutrition and Plants and Animals"; "Food and the Community"; "Dental Health and Food"; "Food Pictures and Models"; and "Food Distribution to Parents." The booklet is available free, from the Cleveland Division of Health, Room 17, City Hall, Cleveland 14.

Government Publications. The 1951 edition of the government's *Occupational Outlook Handbook* devotes three pages of information about dietitians and public health nutritionists. For each, the topics of "Nature of Work," "Training and Other Qualifications," "Outlook," "Earnings," and "Where to Go for More Information" are covered. This book was prepared cooperatively by the Department of Labor's Bureau of Labor Statistics and the Veterans Administration. (The section on dietitians and nutritionists is the work of the Women's Bureau.) It contains reports of 433 occupations and will be used by the VA in counseling disabled verterans and by other federal agencies which provide counseling services. High schools, colleges, and community guidance services are also expected to use it widely. The book may be purchased from the Government Printing Office, Washington 25, for $3.

The Children's Bureau has released a completely new edition of *Infant Care*. This Children's Bureau Publication No. 8 has been published in successive editions since 1914, and over 28 million copies have been distributed. In this new edition Bureau specialists consulted pediatricians, general medical practitioners, nurses, social workers, psychiatrists, nutritionists, and parent-educators as to the newer knowledge pertaining to child care from birth to the first birthday. In this edition great stress is laid on the importance of the child's relation with his parents and others in the family. Seven chapters in this new edition are specifically concerned with feeding, and there is additional information in the appendix. Copies may be obtained from the Government Printing Office, Washington 25, for 20 cents each.

The U. S. Public Health Service has recently issued a new publication titled *Handbook on Sanitation of Dining Cars in Operation*, with the subtitle "Standards of Sanitation for Operation and Maintenance of Food and Drink Service Facilities on Railroad Passenger Cars." The booklet, liberally illustrated with diagrams, begins with standards for the cars themselves, i.e., floors, walls, ceilings, doors, windows, lighting, ventilation, water, and lavatory facilities. Next discussed are equipment and sanitation. Foods themselves are then treated, with regard to: refrigeration and other types of storage, wholesomeness, protection, and waste disposal. The booklet closes with sections on cleanliness of employees and disease control. Copies of this publication, which is Public Health Service Publication No. 83, may also be obtained from the Government Printing Office, Washington 25, D. C. The price is 20 cents.

History of the Public Health Service is a new book by Dr. Ralph C. Williams, Assistant Surgeon General retired, U. S. Public Health Service (Richmond, Virginia: Whittet and Shepperson, 1951). Dr. Williams, who retired from the Service in January 1951, after thirty-three years of duty, is now Director, Division of Medical Services, Georgia Department of Public Health, Atlanta.

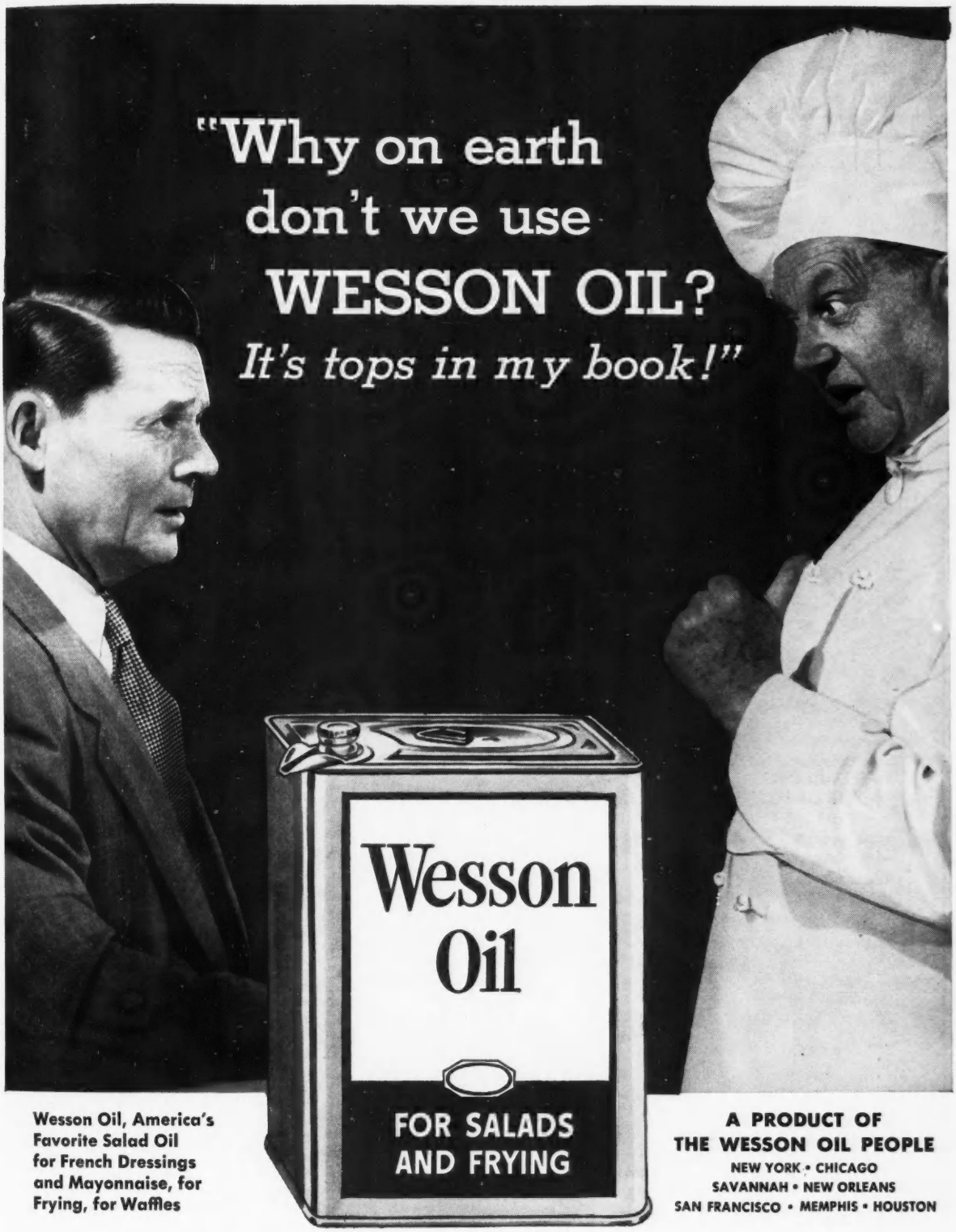
How to Cook Salmon is Test Kitchen Series No. 4 issued by the Fish and Wildlife Service, Department of the Interior. Written by Kathryn L. Osterberg and Rose G. Kerr, Home Economists, Branch of Commercial Fisheries, the booklet contains information on the types and nutritive value of salmon plus thirty-five recipes. *How to Cook Salmon* may be obtained from the Government Printing Office for 15 cents.

Consumers' Use of and Opinions About Citrus Products is the title of Agriculture Information Bulletin No. 50, prepared by the Bureau of Agricultural Economics, U.S.D.A. In a survey of householders made during January and February 1950, both the use of specific citrus products and attitudes and opinions toward them were sought. The data thus collected indicate that practically all homemakers made some use of citrus products during the preceding year—in most instances using at least five different citrus products: oranges, lemons, grapefruit, canned orange juice, canned grapefruit juice, and concentrated orange juice. Homemakers with higher family incomes tended to use a greater variety of products and during the winter used fresh oranges, grapefruit, lemons, and frozen concentrated orange juice more frequently. This pattern was also more typical of homemakers who had attended college than of those with less education. For only frozen concentrated orange juice was age a decisive factor in use; homemakers over fifty years old were less likely to report frequent use of this product during the winter. Approximately half of the users of either fresh oranges or fresh grapefruit report using the same amount during all four seasons. Where there were changes, the direction was most likely to be toward increased use during the winter. When queried on their attitudes toward citrus products, it was found that homemakers generally consider them as a special group of foods, rather than as part of the general class of fruit. They described the difference in terms of health and food values. The publication may be obtained from the Government Printing Office for 40 cents a copy.

A second new publication by the Bureau of Agricultural Economics is *New Concentrated Apple Juice—Its Appeal to Consumers*. This is a report of a ten-week survey in Tyler, Texas, and Modesto, California, to determine consumer acceptance of this new product in terms of repeat purchases. This was an experimental project planned as part of a program to increase the use of "C" grade and cull Delicious apples of the Pacific Northwest. In the fall of 1950, the Washington State Apple Commission supplied the U. S. Western Regional Research Laboratory with enough apples of each of the major varieties produced in the state of Washington to manufacture sufficient quantities of the concentrated apple juice to carry on the discrimination, preference, and market tests. These apples were processed by the Laboratory, and the juice was put on sale in February in Tyler and Modesto. The juices were promoted by newspaper and radio advertising, and after they had been on sale for nine weeks, homemakers in the two cities were interviewed to learn their opinions of it. The juice was used mainly as a breakfast juice or a between-meal snack. Few people used it as a dinner cocktail. Since one of the major uses of the juice was as a snack drink, the influence of temperatures on purchases was studied but found to have no significant relation to sales. A large majority of those who used it reported they liked it unqualifiedly, in most cases the fresh-fruit flavor being the reason. Seven per cent of the homemakers in Tyler and 4 per cent in Modesto bought it. Among those who had also used bottled apple juice, the frozen concentrate was preferred, although between concentrates, frozen orange juice was preferred. Nearly 70 per cent of the homemakers who had bought the apple juice concentrate made repeat purchases, and approximately 40 per cent bought it four or more times during the test period.

National Restaurant Association Publication. *Refrigeration in Restaurants* is the title of Technical Bulletin 200, issued by the Research Department, National Restaurant Association. The booklet, by Robert A. Kramer and Col. Paul P. Logan, is a reprint of Chapter 40 from the *Refrigerating Data Book*, Applications Volume, 3rd Edition, 1950, a publication of the American Society of Refrigerating Engineers. The first part is a general discussion of the "whys" of refrigeration, food storage, and temperatures, humidities, and storage conditions. Refrigeration applications for large and small restaurants are noted; and the various types of equipment described in detail and illustrated. The booklet closes with a section on operation, care, and selection of refrigeration equipment, with emphasis on calculation of loads. Refrigeration terms are defined on the inside back cover.

University of Chicago Post-Doctoral Awards. The Committee on Statistics of the University of Chicago has established, under a five-year grant from the



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News of State Associations

California Dietetic Association. The December meeting of the *Bay Section* of the California Dietetic Association was held at Herrick Memorial Hospital, Berkeley, December 12. Dr. H. Harvey, Chief, Herrick Memorial Research Staff, discussed "Obesity and Its Treatment." He described work done by the California Public Health Service with group therapy for adult obese patients in the San Francisco area. The results indicated that individuals participating in a group were able to lose weight more rapidly than those working alone.

Colorado Dietetic Association. A loan fund of $500 has been established by the Colorado Dietetic Association. The purpose of the fund is to encourage home economics students to select dietetics as a profession by helping to defray expenses of the dietetic internship. Individuals and agencies interested in the profession of dietetics are invited to contribute to the fund, which will be handled by the treasurer of the Colorado Dietetic Association and administered by a committee selected by the president.

Kansas Dietetic Association. The Kansas Dietetic Association is planning a workshop as well as a program meeting for the spring. The meeting will be held jointly with the Kansas Home Economics Association in Topeka on March 21 and 22. A month later the workshop will take place April 23 to 25 in Kansas City at the time of the Midwest Hospital Association meeting.

In organization, the Kansas Association is trying something new this year. One local group is being made responsible for the activities of one section of the state association. The Diet Therapy Section's projects will be carried on by the Wichita group; the interests of the Food Administration Section will be followed by the Topeka dietitians; Community Nutrition problems will be considered by the Manhattan group; and dietitians in the Kansas City Dietetic Association will carry out activities for the Professional Education Section.

The *Kaw Valley Dietetic Association* has elected the following officers for the year: Chairman, Grace Shugart, Kansas State College, Manhattan; Vice-Chairman, Esther Christensen; and Secretary-Treasurer, Lenoir Sjogren.

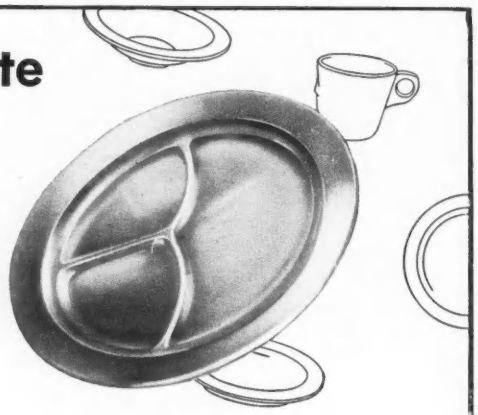
Minnesota Dietetic Association. The Minnesota Dietetic Association held a joint meeting with the Minnesota Home Economics Association in Minneapolis, November 9 and 10. The program included a workshop on the theme of "The Dietitian's Responsibility in Public Relations and Vocational Guidance in the Community," and a psycho-drama titled "Action Methods in Teaching Home Health," interpreted by John S. Pearson, which was Bureau of Psychological Services, Division of Public Institutions.

Dr. W. H. Dankers, Poultry Extension Specialist, University of Minnesota, St. Paul, spoke on "Food and Production Problems in Western Europe," while Robert Lamon, Vice-President, Aslesen Company, Minneapolis, discussed "Canned Foods—Purchasing Procedures."

Mississippi Dietetic Association. Jackson was the scene of the Mississippi Dietetic Association's annual meeting November 16 and 17. The program included the following speeches:

"A Balanced Diet of Records"—Dr. A. H. Lawrence, Chairman, Commercial and

A Complete Line . . . without a Break



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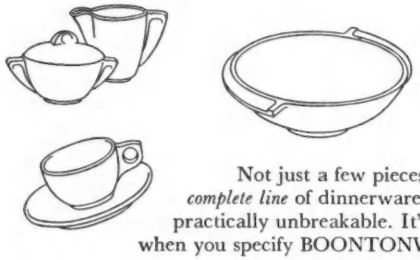
FOREST GREEN
CRANBERRY RED



Not just a few pieces, but a *complete line* of dinnerware that is practically unbreakable. It's yours when you specify BOONTONWARE.

Twenty-three items right now, and more to come. Every piece a fashioning of Melmac® at its finest in style, weight, and durability. And seven handsome colors to consider in building or accenting your decorations.

When you make the all-important dinnerware decision, choose *a complete line.* Go all the way with BOONTONWARE, the Melmac line that has a piece for every food service need.

See your regular Supply House or write to us for the name of your nearest Dealer.

TO MEET CS 173-50 OF HEAVY DUTY MELAMINE TABLEWARE INDUSTRY-WIDE ADOPTED

Boontonware complies with CS 173–50, the heavy-duty melamine dinnerware specification as developed by the trade and issued by U. S. Department of Commerce, and conforms with the simplified practice recommendations of the American Hospital Association.

Boontonware
fine dinnerware fashioned of MELMAC®

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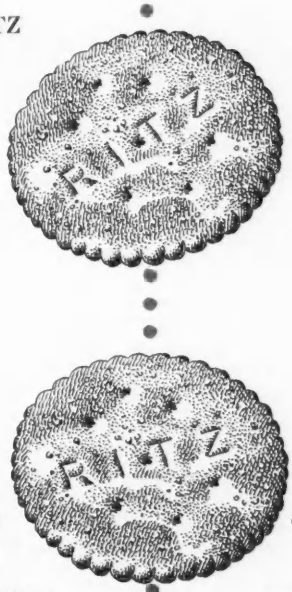
Now! AMERICA'S FAVORITE CRACKER

in NABISCO Individual Servings...

RITZ CRACKERS

... in handy moistureproof packets

- Each package contains two RITZ crackers . . . just right for an individual serving with soup, salad, tomato juice
- Oven-fresh . . . never soggy or stale
- Easy to handle . . . no time wasted in counting crackers
- Less breakage . . . no waste of bottom-of-the-box pieces



- Money-saving . . . because they're lower cost per serving

Everybody loves RITZ Crackers and you can always serve them with pride. In their new moistureproof envelopes you are assured of freshness, attractive appearance and tempting flavor.

SEND FOR THIS FREE BOOKLET packed with ideas on how to increase sales and cut food cost with NABISCO products including: *PREMIUM Saltine Crackers* • *TRISCUIT Wafers* • *RITZ Crackers* • *DANDY OYSTER Crackers* • *OREO Creme Sandwich* ®

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Organization.....

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City..... State.....

NATIONAL BISCUIT COMPANY

Business Administration, University of Mississippi

"Nutrition Problems in the Care of Maternity Patients"—Dr. D. V. Galloway, Director, Division of Maternal and Child Health, Mississippi Board of Health

"Cholesterol and Arteriosclerosis"—Dr. J. P. Bussey, Chief of Medicine, VA Hospital, Jackson

"The Dietitian's Role in an Emergency"—Walter Spiva, Head, Mississippi Civil Defense Program

Vonda A. Webb, Nutrition Consultant, Mississippi State Board of Health, presented a slide demonstration dealing with nutritional deficiency. Lillian Storms Coover was the A.D.A.'s official representative at this meeting and spoke on "Our Professional Opportunities."

The Mississippi Association's project for the year is the preparation of a diet manual to be placed in all hospitals in the state which do not employ a dietitian.

Officers for the Mississippi group for 1951–52 are: President, Janette Z. Habas, Natchez; President-Elect, Helen A. Davis, King's Daughters Hospital, Greenville; Secretary, Lucile S. Ryan, VA Hospital, Jackson; and Treasurer, Dr. Blanche Tansil, University of Mississippi, University Station.

How to make your Blodgett do DOUBLE DUTY
BAKES HERE
ROASTS HERE
Keep this Two-in-One Kitchen Tool busy and it will pay you double dividends. It is scientifically engineered to handle all baking and roasting operations. Sections are separately fired and controlled to supply the exact temperatures for each type of food. While one deck turns out quality controlled baked goods, another deck roasts your meats at LOW TEMPERATURE, retaining the juices, lessening meat shrinkage. Hot breads and pies etc. are done when your roasts are, ready to serve oven-fresh, thus co-ordinating meal-production.
Blodgett makes ovens from its "Basic Three" design which provides the units to make 24 models.
THE G. S. BLODGETT CO. INC.
50 LAKESIDE AVE. BURLINGTON, VT.

North Carolina Dietetic Association. "Horizons for Dietitians" was the theme of the 18th annual convention of the North Carolina Dietetic Association, held in Winston-Salem on November 1 and 2. Dr. George Harrell, North Carolina Baptist Hospital, Winston-Salem, discussed "New Developments in Medicine in Relation to Dietetics." The program also included a talk by E. Z. Jones, Director, State Civil Defense Program, and a discussion of group feeding problems by Richard Whitehill, Supervisor, Forsyth County School Cafeterias.

Officers for this year are: President, Evelyn Cox, Woman's College, University of North Carolina, Greensboro; President-Elect, Mary Anderson, Charlotte Memorial Hospital; Secretary, Peryl Jaynes, Chapel Hill; and Treasurer, Elisabeth Yearick, Duke University Hospital, Durham.

Oklahoma Dietetic Association. Mary C. Zahasky, President-Elect, Oklahoma Dietetic Association, was chairman for the meeting on November 2 of the Oklahoma Hospital Association's new Better Food Service Section. At this meeting, Dr. Daisy L. Purdy, Oklahoma A. & M. College, Stillwater, discussed "Better Food Service," and Agnes Schulz spoke on "The Patient's Tray."

Officers of the Oklahoma Dietetic Association for 1951–52 are: President, Martha Anne Russell, Oklahoma City; President-Elect, Mary C. Zahasky, University of Oklahoma Hospitals, Oklahoma City; Vice-President, Esther M. Musil, Dairy Council, Tulsa; Secretary, Florine Bettis, University of Oklahoma Hospitals, Oklahoma City; and Treasurer, Kathleen Atha, Oklahoma Natural Gas Company, Tulsa. Section chairmen are: Community Nutrition, Geraldine Piper, Oklahoma Department of Health, Oklahoma City; Diet Therapy, Helen Hamra, University of Oklahoma Hospitals, Oklahoma City, and Maxine Turner, Oklahoma Medical Research Foundation, Oklahoma City; Food Administration, Ruth Heckler, Food Service Director for Public Schools, Oklahoma City; and Professional Education, Mary Butler, Oklahoma City.

Kathleen Atha is President of the *Tulsa Dietetic Association*. The *Oklahoma City Dietetic Association* has elected Betty Ann Darcey, VA Hospital, Will Rogers Field, as its President.

Pennsylvania Dietetic Association. Officers of the Pennsylvania Dietetic Association for 1951–52 are: President, Sophia Podgorski, Kirby Health Center, Wilkes-Barre; President-Elect, Ruth Reuning, Shadyside Hospital, Pittsburgh; Secretary, Audrey Paterson, Nesbitt Memorial Hospital, Kingston; and Treasurer, Margaret Madden, Philadelphia Psychiatric Hospital, Philadelphia. Section chairmen are: Food Administration, Mabel Pluemacher, Lewistown Hospital, Lewistown; Community Nutrition, Anna P. K. Stapler, American Red Cross, Philadelphia; Diet Therapy, Sister Maude Behrman, Lankenau Hospital, Philadelphia; and Professional Education, Alma McDougall,

All Children Can Benefit from *this* Protective Hot Drink at Breakfast

In its widely distributed leaflet No. 268, "Eat a Good Breakfast," the U. S. Dept. of Agriculture states: "Summer or winter, there's something hot, as a rule, in a good breakfast. . . . Something hot is cheering and tones up the whole digestive route."

The problem of encouraging children to eat an adequately protective breakfast finds easier solution when Ovaltine in hot milk is recommended as a breakfast beverage. Many children clamor for a hot drink at the morning meal, and hot Ovaltine is the right kind of drink to recommend.

A cup of hot Ovaltine makes an excellent contribution of virtually all essential nutrients, adding substantially to the nutritional start for the day. It also serves in a gustatory capacity by enhancing the appeal of breakfast and making other foods more inviting.

The nutrient contribution made by a cup of Ovaltine is apparent from the table below. Note the wealth of essentials added to the nutritional intake by making the simple recommendation of adding a cup of hot Ovaltine to the child's breakfast.

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Ovaltine

Here are the nutrients that a cupful of hot Ovaltine, made of ½ oz. of Ovaltine and 8 fl. oz. of whole milk,* provides:

PROTEIN	10.5 Gm.	IRON	4 mg.	NIACIN	2.3 mg.
FAT	10.5 Gm.	COPPER	0.2 mg.	VITAMIN C	10 mg.
CARBOHYDRATE	22 Gm.	VITAMIN A	1000 I.U.	VITAMIN D	140 I.U.
CALCIUM	370 mg.	VITAMIN B_1	0.39 mg.	CALORIES	225
PHOSPHORUS	315 mg.	RIBOFLAVIN	0.7 mg.		

*Based on average reported values for milk.

Brighten Trays and Spirits, Too with Custom-Designed TRAY COVERS

- DESSERT DOILIES
- PRINTED NAPKINS
- MENUS

Meals are more attractive . . . more appetizing . . . when AaJo Tray Covers are part of the service. Custom-designed or special holiday patterns add cheer to surroundings, help speed patients' recovery. Write for samples and prices.

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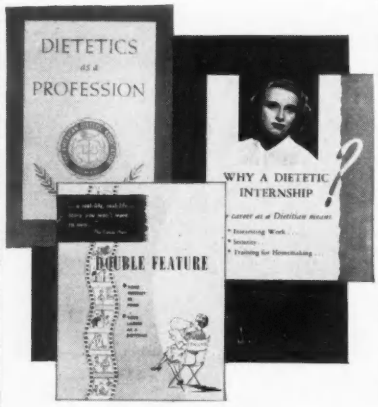

Dietetics as a Profession gives detailed information concerning the qualifications and opportunities for dietitians. Price 25 cents.

Why a Dietetic Internship? explains the importance of a year's internship and describes the activities of a dietetic intern. Price 5 cents; in lots of 25—$.75.

Double Feature was written specifically for the high school girl, and describes simply, with the aid of clever illustrations, the various opportunities offered in a dietetic career. Single copy free; in lots of 100—$1.50.

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FOR THE DIABETIC

Unsweetened Fruit Juices

Packed just as they are pressed from sun-ripened fruit. Whole fruit juice—no sugar or water added. A good way to add flavorsome variety to diets. Apricot, Grape, Grapefruit, Orange, Pineapple, and many other popular fruit juices available. Exact food values printed on the label to aid diet calculation.

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Pennsylvania State College, State College.

South Carolina Dietetic Association. The South Carolina Dietetic Association held its 15th annual meeting in conjunction with the South Carolina Home Economics Association in Rock Hill on November 2 and 3. Ruth M. Yakel, Executive Secretary, A.D.A., represented the national Association. The theme of the program, "Education for Family Life," was carried out in a symposium led by Dr. Alma Bently, State Supervisor, Home Economics Education. Students from France, Sweden, Spain, Guatemala, and China spoke about their mode of family living.

Officers for South Carolina are: President, Frances Eddy, Charleston County Health Department; President-Elect, Julia Brunson, South Carolina Board of Health, Columbia; Secretary, Greta S. Hamilton, E. I. du Pont de Nemours Cafeteria, Camden; and Treasurer, Elizabeth Burriss, University of South Carolina, Columbia.

Virginia Dietetic Association. The Virginia Dietetic Association held a joint meeting in Richmond with the Virginia State Restaurant Association, November 14 through 16. The program included the following speeches:

"Advanced Restaurant Operation"—George Wenzel, Restaurant Consultant, Austin, Texas

"Actual Food Preparation Ideas"—Mildred Hearn and staff, General Foods Corporation, New York City

A forum on restaurant sanitation was directed by James W. Smith, Director, Tourist Establishment Sanitation, Virginia State Health Department. There was also a round table discussion of public and institutional feeding.

Wisconsin Dietetic Association. Officers of the Wisconsin Dietetic Association are: President, Ruth Dickie, Wisconsin General Hospital, Madison; President-Elect, Ruth Humboldt, Muirdale Sanatorium, Wauwatosa; Vice-President, Hedwig Poehler, Milwaukee Health Department, Milwaukee; Secretary, Vivian Brown, Wausau Memorial Hospital, Wausau; and Treasurer, Norma Thompson Dolan, Milwaukee County Hospital, Milwaukee.

Association Activities

Representative to State Meeting. Margaret A. Ohlson, A.D.A. President, will be the national representative at the annual meeting of the Illinois Dietetic Association, February 28 and 29.

Representative to A.A.A.S. Helen S. Mitchell, past Speaker of the A.D.A. House of Delegates, is the official representative of the Association on the A.A.A.S. Council. She attended the A.A.A.S. meetings in Philadelphia, December 27 and 29.

A.M.A. Meeting. The A.D.A. was

All the flavor of vine-ripened tomatoes!

Here is the tomato soup you can always depend on for that natural, appealing flavor of fresh-picked tomatoes. LeGout Tomato Soup is always uniform, always rich, lively, seasoned to perfection. It is extremely easy to prepare, lets you serve a truly home-style soup in a jiffy! Use it with equal ease and economy for making either Regular or Cream of Tomato Soup. Unit cost is modest and you have accurate control for every serving. You'll find many other interesting ways to use this delicious LeGout specialty for chili, sauces and various tomato dishes, just as so many leading chefs are doing today. Ask the LeGout Man or your jobber for a demonstration.

CONCENTRATED TOMATO SOUP

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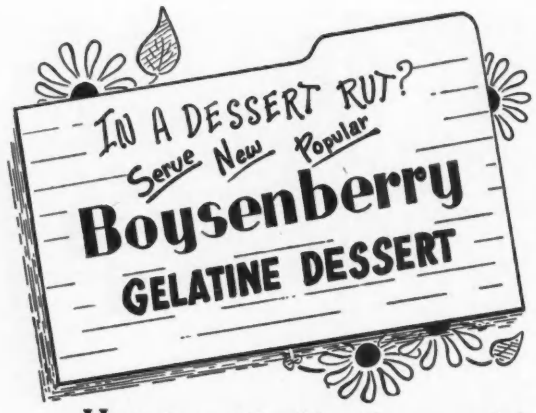
ONLY 2¼c FOR A 6 OUNCE SERVING—Real economy here with accurate cost control at all times! And it's so easy to make this fine soup.

Tomato Soup: Simply add five parts water to one of LeGout. Heat and serve. *Cream of Tomato Soup:* Just add three parts milk and two of water to one of LeGout Tomato Soup, then heat and serve.

Tomato Aspic: Add gelatin to LeGout Concentrated Tomato Soup. Cool and serve.

FREE SAMPLE and RECIPE CARDS. Write today. See how you can use this delicious LeGout product in so many ways.

ANOTHER QUALITY PRODUCT OF *Fearn Foods Inc.*, FRANKLIN PARK, ILLINOIS



You'll be delighted!

Here's the something different in an economical dessert so many dietitians have asked for! Perky, sparkling, Boysenberry—latest addition to the famous H.B.C. quality line—so delicious it has become one of our leading sellers! Other unusual flavors include such tempting specials as *Apricot, Ginger Ale, Pineapple, Pistachio and Spiced Peach*—a total of 18 to choose from.

Perfect for salads as well as desserts!

Each 1 lb. 10 oz. can makes one gallon or 32—4 oz. servings at a cost of 1¾ to 2 cents per serving.

Be sure to order some of these new and unusual flavors today.

12/10 lb. cans.....lb. 36¢ 6 dozen 1 lb. 10 oz. cans Doz. $7.35
Case of 6/10 lb. cans.....lb. 37¢ 4 dozen 1 lb. 10 oz. cans Doz. $7.55

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DIETETIC SCALE

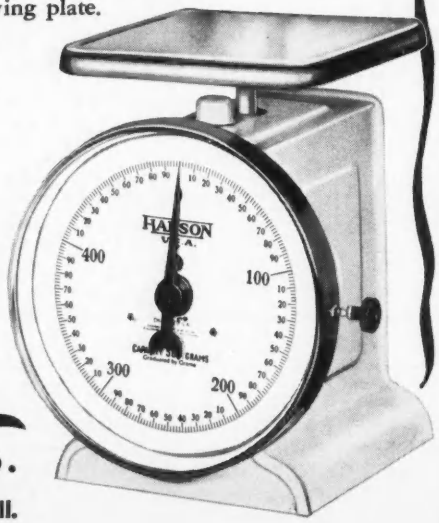
The standard diet scale of the medical profession for controlled diets. Rotating dial eliminates computation as each item of food is added on the serving plate.

Capacity 500 grams by grams. Stainless steel platform, white enamel body, easy to keep clean.

Model 1411 (illustrated) has glass protected dial, price $15.00

Model 1440 enamel dial, price $10.00

See your Supply House



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represented by thirteen of its members at the Clinical Session of the American Medical Association held in Los Angeles, California, December 4 through 7, 1951. The Association exhibit, "Low Calorie Diet," which was used at the Atlantic City A.M.A. meeting in June, was manned by seven of the California dietitians and Clara Zempel, A.D.A. Professional Activities Director, as national representative. At the conferences, five of our members spoke on overweight, nutrition, and health. Miss Zempel appeared with the exhibit on the TV program, "City at Night."

UNESCO. Helen S. Mitchell represented A.D.A. at the meeting of the United States National Commission for UNESCO at Hunter College, New York City, January 27 through 31.

International Dietetic Association. At the meeting of the A.D.A. House of Delegates at Cleveland last October, the question of the International Dietetic Organization proposed by the Netherlands Dietetic Association was reviewed by the Committee on International Relations among Dietitians. This is reported in the *Annual Reports and Proceedings 1950–51*.

On the recommendation of this Committee, the A.D.A. President wrote to the President of the Netherlands Dietetic Association, stating in part that The American Dietetic Association would suggest an International Congress on Dietetics as an alternate to a meeting of an International Dietetic Organization. Such a meeting would allow the presentation of scientific papers and a discussion of dietitians' problems, but would not take any action toward forming an international organization. In this, the British and Canadian Dietetic Associations and the Australian Dietetic Council have expressed a similar viewpoint.

In December, many A.D.A. members received a general preliminary program mailed by the Netherlands Dietetic Association announcing the International Dietetic Organization's First International Congress, to be held in Amsterdam July 7 through 11, 1952. Shortly thereafter, Dr. Margaret A. Ohlson, A.D.A. President, received a letter from Miss N. van den Broek, President, Netherlands Dietetic Association, indicating that the meeting as previously announced would be changed to take the form of an International Congress on Dietetics for the purpose of discussing mutual problems in the field of nutrition and dietetics, and that there would be no plans for founding of an International Dietetic Organization at that time. A printed supplement to the program already mailed will soon be received by all who received the original.

Any A.D.A. member planning to be in Europe this summer who would be interested in attending this Congress should contact Ruth M. Yakel, A.D.A. Executive Secretary. Applications for registration at the Congress must include identification of membership, which will be provided on request by Miss Yakel.

Meat Helps Make Americans the World's Best Nourished People

Recent estimates of the U. S. Department of Agriculture show that the per capita consumption of meat in the United States approaches seven ounces per day. How effectively this average amount of meat in the daily diet contributes to making Americans the world's best nourished people is indicated by the following data. The figures give the average amounts of protein, iron, phosphorus, niacin, riboflavin, and thiamine provided by six-ounce servings of cooked meat (averages of the amounts furnished by six ounces each of cooked beef, lamb, pork, and veal)* and their percentages of the daily dietary allowances recommended by the National Research Council for a sedentary man (154 lb.).

	Amounts per 6 oz.† of Average Cooked Meat	Percentages of Recommended Daily Dietary Allowances
Protein (Biologically complete)	44 Gm.	63%
Iron	5.6 mg.	47%
Phosphorus	414 mg.	28%
Niacin	9.5 mg.	79%
Riboflavin	0.44 mg.	24%
Thiamine	0.50 mg.	42%

† 7 oz. of fresh meat, when cooked, weigh approximately 6 oz.

The important nutrients of meat, however, are not limited to those given above, for which the amounts needed for adequate nutrition have been established. Other nutrients provided by meat, but for which daily needs have not yet been established, include other members of the B complex—biotin, choline, folic acid, inositol, pantothenic acid, pyridoxine, and vitamin B_{12}—and many minerals essential in nutrition.

Every cut and kind of meat supplies these many nutrients for promoting health and efficiency in adults, and for health and good growth and development in children. Besides, meat is rapidly and almost completely digested, and its extractives stimulate the flow of gastric juice. Hence there is sound justification—nutritional, physiologic, and psychologic—for meat being a favorite food in the diet of the American people and in special diets prescribed by the physician.

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*Watt, B.K., and Merrill, A.L.: Composition of Foods—Raw, Processed, Prepared, Agriculture Handbook No. 8, United States Department of Agriculture, Bureau of Human Nutrition and Home Economics, 1950.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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There'll always be a BIG demand for LOUISIANA GOLDEN YAMS

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Prepare the chef for cheers when you serve Louisiana Golden Yams. They're juicy, creamy-textured and extra-rich in Vitamin A. Wonderful as vegetable *and* dessert.

LOUISIANA YAM WEEK FEB. 3 TO FEB. 9

New Appointments, Veterans Administration

The following hospital appointments of dietitians, not previously announced, have been made by the Veterans Administration.

Name	Position	Location
	Boston Area	
Helen E. Ahart	Staff Dietitian	Brooklyn, N. Y.
Elizabeth V. Bixby	Staff Dietitian	Albany, N. Y.
Joan A. Burger	Staff Dietitian	Montrose, N. Y.
Beverly Collins	Staff Dietitian	White River Junction, Vt.
Margaret E. Craig	Staff Dietitian	Bath, N. Y.
Patricia Fazey	Staff Dietitian	Montrose, N. Y.
Bonnie Fisher	Staff Dietitian	West Roxbury, Mass.
Ruth A. Hendler	Staff Dietitian	Albany, N. Y.
Joan L. McLaughlin	Staff Dietitian	Bedford, Mass.
Eileen A. Maloney	Staff Dietitian	Bronx, N. Y.
Helen M. Matejik	Staff Dietitian	Albany, N. Y.
Martha E. Purdom	Staff Dietitian	Brooklyn, N. Y.
Ruth L. Rappenecker	Staff Dietitian	Batavia, N. Y.
Martha J. Reddout	Staff Dietitian	Bath, N. Y.
Theresa L. Renner	Staff Dietitian	Bronx, N. Y.
June P. Timons	Staff Dietitian	Framingham, Mass.
Audrey J. Wong	Staff Dietitian	Newington, Conn.
Dorothy L. Woodcock	Head Dietitian (Reappointment)	Togus, Maine
	Washington, D. C. Area	
Phyllis L. Ahlers	Staff Dietitian	Wilmington, Del.
Bernice L. Anderson	Head Dietitian	Marion, Ind.
Ana Lydia Garvajal	Staff Dietitian	Beckley, W. Va.
Jean M. Casey	Staff Dietitian	Lyons, N. J.
Florence Falkenhagen	Staff Dietitian	Aspinwall, Pa.
Pearl J. Gary	Assistant Chief Dietitian	Ft. Benj. Harr., Ind.
Dorothy M. Golden	Staff Dietitian	Lyons, N. J.
Jean Heller	Head Dietitian	Lyons, N. J.
Evelyn Hollen	Head Dietitian	Outwood, Ky.
Florence Ann Hughes	Staff Dietitian	Richmond, Va.
Marjorie M. Ihlenfield	Staff Dietitian	Cleveland, Ohio
Eileen Anne Kelly	Staff Dietitian	Cleveland, Ohio
Charlotte D. Martin	Staff Dietitian	Lyons, N. J.
Anna C. Sessner	Staff Dietitian	Ft. Howard, Md.
Martha G. Simington	Staff Dietitian	Ft. Benjamin Harrison, Ind.
Elmira B. Tignor	Staff Dietitian	Aspinwall, Pa.
Teresa Walsh	Staff Dietitian	Erie, Pa.
	Atlanta Area	
Joan A. Atcheson	Staff Dietitian	Kennedy, Memphis, Tenn.
Rebecca J. Cloyes	Staff Dietitian	Kennedy, Memphis, Tenn.
Beatrice J. Combahee	Staff Dietitian	Columbia, S. C.
Priscilla Gay Drohman	Staff Dietitian	Augusta, Ga.
Helen L. Ekes	Staff Dietitian	Jackson, Miss.
Sarah Bess Hay	Staff Dietitian	Kennedy, Memphis, Tenn.
Mary L. McMillian	Staff Dietitian	Montgomery, Ala.
Sara F. Merritt	Staff Dietitian	Augusta, Ga.
Helen S. Nygard	Staff Dietitian	Columbia, S. C.
Sibyl E. Skipper	Staff Dietitian	Memphis, Tenn.
Martha Ann Weldon	Staff Dietitian	Kennedy, Memphis, Tenn.
	St. Louis Area	
Delia C. Burross	Staff Dietitian	Dallas, Tex.
Mildred M. Darnell	Assistant Chief Dietitian	Topeka, Kans.
Geraldine M. Gocke	Staff Dietitian	N. Little Rock, Ark.
Phyllis Greenberg	Staff Dietitian	Houston, Tex.
Betty E. Hummel	Staff Dietitian	Fayetteville, Ark.
Elizabeth J. Imhoff	Staff Dietitian	Denver, Colo.
Mary E. Manning	Staff Dietitian	Wadsworth, Kans.
Dorothy E. Peters	Staff Dietitian	Alexandria, La.
Adele Pittman	Clinic Dietitian	Houston, Tex., Reg. Off. Cl.
Bernadette M. Rehberg	Staff Dietitian	Albuquerque, N. Mex.
Eleanor Mae Roberts	Staff Dietitian	Denver, Colo.
Dorothy Trubow	Staff Dietitian	Jefferson Barracks, Mo.
Eileen R. Wiss	Staff Dietitian	Temple, Tex.
	Fort Snelling, Minnesota Area	
Helen M. Dalton	Staff Dietitian	Hines, Ill.
Glenela W. Fine	Staff Dietitian	Dearborn, Mich.
Betty Jane Guyer	Staff Dietitian	Wood, Wis.
Jo Ann Hicks	Head Dietitian	Hot Springs, S. Dak.
Doris B. Higgins	Staff Dietitian	Downey, Ill.
Carol J. Irwin	Staff Dietitian	Hines, Ill.
Rosemary McQuade	Staff Dietitian	Dearborn, Mich.
Cynthia M. Moore	Staff Dietitian	Wood, Wis.
Alice E. Nelson	Staff Dietitian	Minneapolis, Minn.
Elizabeth Nelson	Staff Dietitian	Downey, Ill.
Theresa M. Plaskey	Staff Dietitian	Hines, Ill.
Zoe Mae Prost	Staff Dietitian	Hines, Ill.
Patricia L. Rainey	Staff Dietitian	Minneapolis, Minn.
Mary Jane Roick	Staff Dietitian	Wood, Wis.
Leona Smith	Head Dietitian	Miles City, Mont.
Mary H. Terry	Staff Dietitian	Ft. Custer, Mich.
Phyllis Tikalsky	Staff Dietitian	Wood, Wis.
Amy Wilbert	Head Dietitian	Sioux Falls, S. Dak.
	San Francisco Area	
Lucille A. Bailey	Staff Dietitian	Los Angeles, Calif.
Patricia Brockbank	Clinic Dietitian	Seattle, Wash., Reg. Off. Cl.
Mary Alice Goodwin	Head Dietitian	Seattle, Wash.
Elva A. Hiscock	Assistant Chief Dietitian	Los Angeles, Calif.
Myrna M. Palmer	Staff Dietitian	Phoenix, Ariz.
Nellie Ward	Head Dietitian	Los Angeles, Calif.
Margaret Williams	Staff Dietitian	Tucson, Ariz.